BRITISH DENTAL JOURNAL

VOL. XCI, No. 4 AUGUST 21, 1951

THERE WAS A TIME . . .

when acrylic teeth were viewed by the Dental Profession with some misgivings; a natural reaction no doubt as at that time little information regarding their functional and wearing qualities was available.

Since those days many lessons have been learned; considerable progress has been made and, as pioneers in this field, we are justly proud of the enviable record which CLASSIC TEETH have acquired.

Especially are we proud that CLASSIC TEETH have for a long time been in great demand in almost every country in the world.

In keeping ever abreast of scientific progress, CLASSIC TEETH continue to maintain their supremacy

Obtainable from your usual dealer or direct from

COTTRELL & CO.

15-17 · CHARLOTTE STREET · LONDON · W.1

Telephones : LANGHAM 5500 (20 lines)

Telegrams : "TEETH, RATH, LONDON"

August 21, 1951

BRITISH DENTAL JOURNAL

The Journal of the British Dental Association

(Incorporating the "Mouth Mirror" and the "Dental Gazette")

First and Third Tuesdays in each month

Price to non-members - 2s. 6d. per copy. Postage 3d. Annual Subscription £2 10s. post free

CONTENTS

Original Communications PAGE

Symposium on the Prevention of Dental Disease—A Review. By Professor J. BOYES, F.D.S. R.C.S.Eng. 83

Some Recent Experimental Investigations. By J. D. KING, Ph.D., D.Sc., F.D.S. R.C.S.Eng. 86

Clinical Investigations in Preventive Dentistry. By JOHN MILLER, B.D.S.Manch. 92

Some Factors Affecting Convalescence in Oral Surgery. By RONALD WALKER, H.D.D.Edin., L.D.S.Lpool. 99

Practical Notes

Method of Splinting Loose Incisors. By R. G. WOODWARD, *M.C.*, L.D.S.Eng. 101

Treatment of the Moderate Gum Pocket. By K. MCALLISTER, L.D.S.Lpool... 101

Editorial

Prevention 102

Continued overleaf

It is perfectly clear—

with 'SMOG' ANTI-MIST CLOTH

'Smog' is a 10" cloth impregnated with an entirely new chemical, and one application will prevent misting on any surface where clear vision is essential.

A mouth mirror treated with 'Smog' will remain crystal clear all day, eliminating the need for flaming. Sterilizing will not affect the clarity of the mirror once 'Smog' has been applied.

Price 2/6 each

Obtainable from your usual dealer or direct from

SOLE DISTRIBUTORS TO THE DENTAL PROFESSION

COTTRELL & COMPANY

15-17 · CHARLOTTE STREET · LONDON · W.1

Telephone : LANGHAM 5500 (20 lines) Telegrams : "TEETH, RATH, LONDON"

CONTENTS—*continued*

	PAGE
Notes and Comments	
The International Dental Congress, London, 1952	103
The Business of Dentistry	103
Fluorine in Water Supplies	104
The Dentists' Provident Society	104
Fifty Years Ago	104
Letters to the Editor	
Symposium on the Prevention of Dental Disease (Stanley P. Meacock)	104
Thumb Sucking (Joseph Angelman)	105
Topical Application of Fluoride tc Children's Teeth (D. Jackson)	105
Effect of CO_2 Spray (D. Nelson)	106
Reviews and Abstracts	106
The Health Service	107
Public Dental Service	108
Dental News	109
The Schools	110
Obituary	
Laurence H. Pollitt	110
John Henry Skerritt	110
Our Diary	110
British Dental Journal	110
Supplement	
Association Notices	19
Branches and Sections	19
Correspondence	
The Public Dental Service and Dilutees (Donald W. Hunt)	21
Grant-in-Aid (P. B. John)	22
New Members	22
Forthcoming Meetings at Headquarters	22

NOW AVAILABLE FROM METRODENT—

• EMDA — ALL EQUIPMENT, SPARES AND REPLACEMENTS

• VITA — FURNACES, SPARES, REPLACEMENTS, PORCELAIN AND PORCELAIN TEETH

• X-RAY TUBES — FOR MOST TYPES OF PRE-WAR MACHINES

METRODENT LTD

39a WELBECK STREET, LONDON, W.1
78 JOHN WILLIAM ST., HUDDERSFIELD
464 CHESTER ROAD, MANCHESTER, 16

THE MAKERS OF

The Finest Acrylic Teeth in the World!

METROLUX
REPLICA
METROCRYL

CLASSIFIED ADVERTISEMENTS

OFFICIAL and LEGAL NOTICES: 7s. 6d. per line (minimum 30s.).

PRACTICES for SALE and WANTED, PARTNERSHIPS, APPOINTMENTS and SITUATIONS VACANT: 30 words or less 20s. (21s. with a Box No.), each additional 6 words or less 4s.

EQUIPMENT for SALE and WANTED, HOUSES and PROFESSIONAL PREMISES, HOTELS and APARTMENTS, MOTOR CARS, TRADE ANNOUNCEMENTS, DENTAL LABORATORIES and MISCELLANEOUS: 30 words or less 25s. (26s. with a Box No.), each additional 6 words or less 5s.

APPOINTMENTS and SITUATIONS WANTED: 24 words or less 12s. (13s. with a Box No.), each additional 6 words or less 3s. All small advertisements MUST be PREPAID before insertion.

Cheques and P.O. Orders should be made payable to the "British Dental Association," and crossed "Midland Bank."

Orders and remittances for advertisements must reach the Journal Manager, at 13, Hill Street, Berkeley Square, London, W.1, at least 11 days before publication date. **Advertisements cannot be accepted by telephone.**

Replies to Box Numbers should be addressed Box No.—c/o B.D.J., 13, Hill Street, Berkeley Square, London, W.1. A Box Number is used in place of name and address to conceal identity of advertiser. **In no circumstances will this information be divulged by this office. Telephone messages for transmission to advertisers under Box Numbers cannot be accepted.**

Members are requested before applying for any public dental appointments advertised in the lay Press to communicate with The Secretary, 13, Hill Street, Berkeley Square, London, W.1.

SCHOLARSHIP

GIBBS Travelling Scholarship. A TRAVELLING SCHOLARSHIP to the value of £300 is offered by D. & W. Gibbs Ltd., for a three months' tour of Scandinavia to study dental health education. Candidates must be both resident in and hold a registrable dental qualification in the United Kingdom. They are required to write a thesis of not more than 3,000 words on "Dental Health Education for the Public as a factor in Preventive Dentistry." Applications must be received by September 30, and the thesis completed by December 31, 1951. Further particulars and application forms may be obtained from the Hon. Secretary, Gibbs Travelling Scholarship Committee, British Society of Periodontology, 53, Portland Place, W.1.

REFRESHER COURSE

THE Plastic and Maxillo Facial Surgery Unit, Rooksdown House, Basingstoke. (South West Metropolitan Region—Park Prewett Group Hospital Management Committee.) A seven day Refresher Course in MAXILLO FACIAL and ORAL SURGERY will be held at the above Unit from September 24—29, 1951. Full particulars and details of accommodation may be obtained from the Medical Superintendent. The fee for the course will be £3 3s.

PUBLIC APPOINTMENTS

UNIVERSITY of Edinburgh. School of Dental Surgery. Applications are invited for the following whole-time posts: LECTURER (ASSISTANT) in the DEPARTMENT of OPERATIVE DENTAL SURGERY. Salary £1,100 x £100 annually to £1,500 per annum with Superannuation Benefit and Children's allowance where applicable. LECTURER (ASSISTANT) in the DEPARTMENT of OPERATIVE DENTAL SURGERY. Salary £600 x £100 annually to £1,000 per annum, with Superannuation Benefit and Children's allowance where applicable. LECTURER (ASSISTANT) in the DEPARTMENT of DENTAL PROSTHETICS, the main duties being to supervise the instruction of students in Dental Mechanics. Salary £1,100 x £100 annually to £1,500 per annum, with Superannuation Benefit and Children's allowance where applicable. Candidates, who must possess a registrable dental qualification, should forward their applications, together with the names of three referees to the Secretary to the University not later than August 31, 1951.

THE University of Liverpool. Applications are invited for the following posts in the School of Dental Surgery: (a) SENIOR LECTURER (salary scale £1,500/100/2,000 per annum), or LECTURER (salary scale £900/100/1,500 per annum), in DENTAL PATHOLOGY and BACTERIOLOGY; (b) LECTURER (salary scale £900/100/1,500 per annum) or ASSISTANT LECTURER (salary scale £600/100/800 per annum) in OPERATIVE DENTAL SURGERY; (c) LECTURER (salary scale £900/100/1,500 per annum) or ASSISTANT LECTURER (salary scale £600/100/800 per annum) in DENTAL PROSTHETICS. The status and salary of the successful candidates to be fixed according to qualifications and experience. Applications stating age, academic qualifications and experience, together with the names of three referees should be received not later than September 15, 1951, by the undersigned, from whom further particulars of the conditions of appointment may be obtained. Stanley Dumbell, Registrar. July, 1951.

THE University of Sheffield. Director of Dental Studies: Professor G. L. Roberts, F.D.S. R.C.S., M.B., Ch.B., B.D.S. Applications are invited for the following full-time appointments: (1) LECTURER in ORAL ANATOMY and HISTOLOGY, combined with Preventive Dentistry; (2) ASSISTANT LECTURER and DEMONSTRATOR in ORTHODONTICS; (3) DEMONSTRATOR and RESEARCH ASSISTANT in DENTAL and ORAL PATHOLOGY, to begin duties January 1, 1952, or as soon as possible thereafter. Salary scales: Lecturer £700 x £100—£1,500; Posts (2) and (3) £600 x £25—£650, with family allowance and superannuation under F.S.S.U. The initial salary on the scales will in each case be according to qualifications and experience, and, in the case of the Lectureship may be as high as £1,000. Candidates for posts (1) and (2) must hold a registrable dental qualification but this, though desirable, is not essential for post (3) for which persons qualified in Medicine or in Science may be considered. (The salary scale for persons not holding a medical or dental qualification is £450 x £25—£500.) Applications (6 copies for the Lectureship, 2 copies for other posts) giving age, qualifications and experience, with testimonials and the names of not more than three referees, should reach the undersigned (from whom further particulars may be obtained) not later than September 22, 1951. A. W. Chapman, Registrar.

THE University of Manchester. Turner Dental School. Applications are invited for the post of ASSISTANT LECTURER in ORAL SURGERY. Salary on a scale rising to £1,000 per annum, membership of the F.S.S.U. and Children's Allowance Scheme. Initial salary according to qualifications and experience. Applications should be sent by September 15, 1951, to the Registrars, The University, Manchester, 13, from whom further particulars and forms of application may be obtained.

UNIVERSITY College Hospital, Gower Street, W.C.1. Applications are invited for the post of PART-TIME REGISTRAR to the PROSTHETICS DEPARTMENT of University College Hospital Dental Department for a period of six months in the first instance. The successful applicant will be required to attend six half-days a week (Salary scale £775/890 p.a.). Applications, with the names of two referees should be submitted to the Secretary by September 1, 1951.

UNIVERSITY of Bristol Dental Hospital. United Bristol Hospitals. Applications are invited for the post of REGISTRAR in DENTAL SURGERY. The appointment will be whole-time and the candidate appointed may also be required to perform duties in other Hospitals of the Group. The salary and terms and conditions of service will be as negotiated between the Minister of Health and the profession, and the post will be subject to the National Health Service Superannuation Regulations. The appointment will be for a period of one year in the first instance, and will be renewable for a further period of one year. Applications, stating full christian names, age, education, qualifications and experience, and giving the names of two referees should be sent to Secretary to the Board, Bristol Royal Infirmary, Bristol, 2.

LONDON Hospital, Whitechapel, E.1. Applications are invited for the post of full-time REGISTRAR in the DENTAL DEPARTMENT. The successful applicant who must hold a registered dental qualification, will be given the opportunity to work in all departments. Applications to the House Governor, The London Hospital, from whom further particulars may be obtained. H. Brierley, House Governor.

THE Plastic and Maxillo Facial Surgery Unit, Rooksdown House, Basingstoke. (South West Metropolitan Region—Park Prewett Group Hospital Management Committee). Appointment of Registrars. Applications are invited from registered Dental Practitioners for two posts of REGISTRAR in the above Unit. The appointments are full time and residential. Some previous experience in Maxillo Facial and Oral Surgery is desirable. The post is recognised for the F.D.S. R.C.S. (Eng.) examination. Copies of the standard form of application (5) may be obtained from the Secretary, Park Prewett Hospital Management Committee, Basingstoke, upon receipt of a stamped addressed envelope and should be returned as soon as possible.

EASTMAN Dental Hospital and Institute of Dental Surgery (University of London), Gray's Inn Road, W.C.1. Applications are invited for the following posts (non-resident) in the Department of Conservative Dentistry:—(a) SENIOR HOSPITAL DENTAL OFFICER, (b) SENIOR REGISTRAR. Remuneration in accordance with the terms and conditions of service of Hospital Medical and Dental Officers for the time being in operation. Canvassing will disqualify, but candidates are invited to visit the Hospital by appointment. Full particulars and application forms obtainable from the Director, to whom applications should be made before September 22, 1951.

BIRMINGHAM (Dudley Road) Group of Hospitals. Dudley Road Hospital, Birmingham 18. Applications are invited for the appointment of a full-time or part-time (9 sessions) SENIOR HOUSE OFFICER in DENTAL SURGERY. The post is recognised for the F.D.S. qualification. Salary will be at the rate of £650 p.a. full-time and the post will be non-resident. Applications marked "Senior House Officer in Dental Surgery, Dudley Road Hospital" stating age, nationality and experience together with the names of two referees should be sent within fourteen days of the appearance of this advertisement to the Secretary, Dudley Road Hospital, Birmingham 18.

THE Hospital for Sick Children, Great Ormond Street, London, W.C.1. There will be a vacancy on October 15, 1951, for a resident DENTAL HOUSE SURGEON (Senior House Officer). Salary £670 per annum. The post is recognised for the Fellowship in Dental Surgery of the Royal College of Surgeons. Further particulars and form of application, which must be returned not later than September 3, 1951, are obtainable from the undersigned. H. F. Rutherford, House Governor and Secretary.

WEST Middlesex Hospital, Isleworth, Middlesex. (South West Middlesex Hospital Management Committee). Applications are invited from registered Dental Practitioners for the resident post of DENTAL HOUSE SURGEON now vacant. Salary terms and conditions as approved for Hospital medical and dental staff. Applications, stating age, qualifications with dates, details of experience and the names and addresses of three referees to the Secretary of the Committee, West Middlesex Hospital, Isleworth, as soon as possible.

WOOLWICH Group Hospital Management Committee. DENTAL HOUSE SURGEON. Vacant now. 6 months' appointment, resident or non-resident. Duties include assisting Consultants on their visiting days and dental treatment for in-patients. The appointment is to the Dental Department of the Woolwich Group of Hospitals (1,500 beds). Applicants should have registered dental qualifications. Salary £350 to £450 p.a., according to experience. Apply to Secretary, Memorial Hospital, Woolwich, S.E.18.

BARROWMORE Hospital (205 Beds), Great Barrow, Chester. DENTAL SURGEON. Applications are invited for this appointment, which consists of one fortnightly session of approximately three hours. The rate of remuneration is in accordance with National Health Service rates. Applications should be submitted to the Secretary, from whom further details may be obtained.

SOUTH-EASTERN Regional Hospital Board, Scotland. Applications are invited from suitably qualified Dental Practitioners for a PART-TIME post in the CONSERVATION DEPARTMENT of the Edinburgh Dental Hospital and School. The duties of the post amount to one session per week. The remuneration will be at the rate authorised for a Senior Hospital Dental Officer (or, in certain circumstances, for a General Practitioner). The post is superannuable and the conditions of service are in accordance with the Regulations. 10 copies of applications, giving particulars of age, previous experience, and qualifications, together with names of three referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh Gardens, Edinburgh, 3, within 30 days.

SHREWSBURY and Wolverhampton Group of Hospitals. Applications are invited from registered Dental Practitioners for the post of CLINICAL ASSISTANT (DENTAL) to carry out duties jointly at hospitals in the Shrewsbury and Wolverhampton Hospital Management Committee areas. The appointment will be for nine notional half-days weekly, and the salary is at the rate of £150 per annum per notional half-day. The appointment will be in accordance with the Terms and Conditions of Service of Hospital Medical and Dental Staff (England and Wales), and the National Health Service (Superannuation) Regulations 1950. Canvassing will disqualify. Six copies of applications, giving particulars as to name, age, qualifications, experience and the names of three referees should be submitted to the undersigned, within fourteen days of the publication of this advertisement. J. P. Mallett, Secretary. Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury. July 10, 1951.

COUNTY Boroughs of Smethwick and West Bromwich Education Committees. Senior Dental Surgeon. The County Boroughs of Smethwick and West Bromwich invite applications from registered Dental Surgeons for the appointment of SENIOR DENTAL SURGEON to the two County Boroughs on the staff of the Chief Education Officers, and responsible to the School Medical Officers for the organisation, development and clinical efficiency of the School Dental Service, and such other work as may be assigned to him by the two Education Committees. He will also be expected to assist in dental work connected with Maternity and Child Welfare. His duties will be partly administrative and partly clinical. Salary will be based on the total population of the two Boroughs, that is, £1,250 rising by annual increments of £50 to £1,400. He must devote his whole time to the duties of the appointment, and will not be allowed to undertake private practice, or to receive fees for his work. The appointment is subject to the Local Government Superannuation Act, 1937, and to a medical examination. Conditions of the appointment and forms of application which should be returned not later than 21 days after the appearance of this advertisement, may be obtained from the Director of Education, Education Offices, "Highfields," West Bromwich, or the Chief Education Officer, 215, High Street, Smethwick.

METROPOLITAN Police Dental Clinic. Applications invited for appointment as DENTAL SURGEONS at the Dental Clinic, 109, Lambeth Road, S.E.1. Salary as dental practitioner Grade II practising whole time at a Health Centre—viz.: £900 x £35—£1,500 (according to age and experience). Superannuation arrangement under National Health Service Regulations. Application form and terms of appointment from Secretary (Room 163), New Scotland Yard, S.W.1.

NORTHERN Ireland General Health Services Board. Appointment of Assistant Dental Officer. Applications are invited for the post of ASSISTANT DENTAL OFFICER to the Board. The duties will relate to the examination and approval of dental estimates, the carrying out of dental examination sessions throughout the Province and generally assisting the Dental Officer in the operation of the dental services provided under Part II of the Health Services Act (Northern Ireland), 1948. Applicants should be registered dentists and have had at least five years' experience in the practice of their profession since registration. The salary for the post will be £850 rising by annual increments of £50 to a maximum of £1,250, the point of entry on the scale to be determined by the qualifications and experience of the successful candidate. The post is a whole-time one and any fees or emoluments received apart from the salary must be surrendered to the Board. Subject to a probationary period of six months, the appointment will be permanent and pensionable. The salary will be subject to deductions of 6 per cent contributions under the Health Services Superannuation Scheme. Preference will be given to suitably qualified candidates who served with H.M. Forces during the war years. Canvassing, either directly or indirectly, will disqualify. The appointment is subject to the approval of the Ministry of Health and Local Government. Applications should include (1) date and place of birth and particulars of education, (2) the names and addresses of two referees to whom the Board may apply for confidential testimonials, and (3) particulars of service with H.M. Forces, and should be sent with copies of two recent testimonials in envelopes marked "Assistant Dental Officer," to the Secretary, Northern Ireland General Health Services Board, 9, Upper Queen Street, Belfast, so as to ensure delivery not later than September 1, 1951.

BOROUGH of Cheltenham. Appointment of DENTAL SURGEON. Applications are invited from registered Dental Surgeons (male or female) for the above full-time appointment. Salary scale £800 per annum rising by annual increments of £50 to a maximum of £1,250 per annum, the commencing salary being fixed according to experience of the selected applicant. The duties will be in connection with the School Health Service in the Borough of Cheltenham which is an "Excepted District" under the Education Act, 1944, and the officer appointed will be in the service of the Gloucestershire County Council. The Conditions of Service in the Second Schedule to the Memorandum of Recommendations of the Dental Whitley Council (Local Authorities) dated February 20, 1951, will apply to the appointment which will be subject to three calendar months' notice on either side. The successful applicant will be required to pass a medical examination and to contribute under the appropriate Superannuation Scheme. Applications giving particulars of qualifications, training and experience with copies of three recent testimonials should be sent to the undersigned within ten days of the appearance of this advertisement. F. D. Littlewood, Town Clerk. Municipal Offices, Cheltenham.

THE London County Council invites applications from registered Dental Practitioners with a degree or diploma in dental surgery for appointment as whole-time DENTAL OFFICERS in Public Health Department; salary scale £800 x £50—£1,250, commencing salary dependent on experience offered. Apply to Medical Officer of Health (PH/D.1), the County Hall, Westminster Bridge, London, S.E.1. (834.)

COUNTY Council of Renfrew. School Dental Service. The Council have a vacancy for a SCHOOL DENTAL OFFICER for the Mobile Dental Unit. The person appointed will be in charge of that Unit and will drive it from place to place. A receptionist is provided. The salary is at the rate of £800—£1,250. The post is superannuable and the person appointed must pass a medical examination and contribute to the County Council's Superannuation Scheme. Forms of application may be obtained from the County Medical Officer, 16, Back Sneddon Street, Paisley, to whom they should be returned as soon as possible. Robert Urquhart, County Clerk. County Buildings, Paisley.

THE LONDON HOSPITAL DENTAL SCHOOL
(UNIVERSITY OF LONDON)

The School, which is fully equipped with the latest appliances, is an integral part of the College and Hospital, and is thus admirably situated for providing a complete curriculum.

General Anatomy: Professor J. D. Boyd, M.Sc., M.D., B.A.O.Belf.
Dental Anatomy: A. d'A. Bellairs, M.A., M.Sc., L.R.C.P., M.R.C.S.
Physiology: Professor J. L. D'Silva, Ph.D., D.Sc., M.B., B.S., M.R.C.P.
Dental Pathology and Histology: Professor A. E. W. Miles, F.D.S., L.R.C.P., M.R.C.S., Senior Assistant—J. A. Pedler, B.D.S., L.D.S., L.R.C.P., M.R.C.S.
General Pathology: Professor Dorothy Russell, Sc.D.Camb., M.D.Lond., F.R.C.P., J. W. Landells, M.B., B.Ch.Camb., M.R.C.P., and J. F. Smith, M.B., B.Ch.Camb., M.R.C.P.
Dental Bacteriology: C. F. Barwell, M.B., B.Ch.
Dental Prosthetics: Director—Arthur G. Allen, F.D.S. Senior Assistant—S. F. Fish, L.D.S.
Metallurgy and Properties of Dental Materials: I. S. Cardell, M.Sc., A.R.I.C., L.D.S.
Children's Dentistry: A. M. Horsnell, F.D.S., L.R.C.P., M.R.C.S.
Orthodontics: H. E. Wilson, L.D.S.Belf. Senior Assistant—J. S. Beresford, B.D.S.N.Z., H.D.D.Ed.
General Medicine: K. M. A. Perry, M.D.Lond., F.R.C.P.
General Surgery: A. M. A. Moore, F.R.C.S.
Conservative Dentistry: Director—A. M. Horsnell, F.D.S., L.R.C.P., M.R.C.S. Assistant Director—N. Livingstone-Ward, L.D.S. Lpool. Senior Assistant—D. H. Shepperd, L.D.S.
Minor Oral Surgery: G. T. Hankey, *O.B.E., T.D.*, F.D.S., L.R.C.P., M.R.C.S.
Dental Anæsthesia: S. G. Allen, F.D.S., L.R.C.P., M.R.C.S.
Oral Pathology: Professor A. E. W. Miles, F.D.S., L.R.C.P., M.R.C.S.
General Anæsthesia: J. H. T. Challis, L.R.C.P., M.R.C.S., F.F.A. R.C.S.&P., G. P. Fox, M.A., D.A., R.C.S.&P., L.R.C.P., M.R.C.S.
Dental Radiology: G. T. Hankey, *O.B.E., T.D.*, F.D.S., L.R.C.P., M.R.C.S.
Dental Materia Medica: W. R. Keizer, F.D.S., L.R.C.P., M.R.C.S.
Pharmacology and Therapeutics: Miles Weatherall, M.A., B.Sc., B.M., B.Ch.

Demonstrators—

C. I. Hadlow, L.D.S.
S. J. Rigden, L.D.S.
D. J. Richie, L.D.S.
D. Soul, F.D.S.
F. Stockman Vine, L.D.S.
J. C. Thonard, B.D.Sc.Melb.
W. H. West, L.D.S.
P. M. Young, L.D.S.

Connected with the Medical College and Dental School are a Library, Athenæum, Clubs Union, Dining Hall, Students' Hostel, Squash Courts, and an Athletic Ground of over 13 acres.

An Entrance Scholarship valued £50 is offered each year and is eligible for Supplementation by the Ministry of Education. The Examination will be held during April. The subjects of the examination are Biology, Chemistry and Physics.

For a prospectus containing particulars as to fees and course of study advised, apply to the Dean, who will be glad to make arrangements for anyone wishing to see over the School.

Dean—A. E. Clark-Kennedy, M.D., F.R.C.P. The London Hospital Medical College, Turner Street, E.1.
Dental Sub-Dean—A. M. Horsnell, F.D.S., L.R.C.P., M.R.C.S. *Secretary*—H. P. Laird, B.A.

MIDDLESEX County Council. County Health Dept. DENTAL OFFICERS, registered Dental Surgeons (whole-time) required: (a) Area 1 (Edmonton and Enfield); (b) Area 8 (Hayes/Harlington, Ruislip-Northwood, Uxbridge, Yiewsley and West Drayton); (c) Area 9 (Heston and Isleworth, Southall, Brentford and Chiswick) (part-time considered). Private practice not allowed. Duties include inspection and treatment of mothers and young children and School Dental Service. Salary scale £800 x £50—£1,250 p.a. inclusive. Previous local authority service in similar grade may determine commencing salary where there is no break in service between appointments. Established, superannuable, subject to medical assessment and prescribed conditions. Applications (no forms) stating age, qualifications, experience, two referees to (a) Joint Area Medical Officer, Area Health Office, Public Offices, Enfield; (b) Area Medical Officer, Local County Offices, High Street, Uxbridge; (c) Area Medical Officer, 92, Bath Road, Hounslow, Middlesex, by September 18 (quoting J.704, *B.D.J.*). Canvassing disqualifies. C. W. Radcliffe, Clerk of the County Council.

MIDDLESEX County Council. County Health Department. Two DENTAL OFFICERS, registered Dental Surgeons, required initially in Area 3 (Hornsey and Tottenham). Private practice not allowed. Duties include inspection and treatment of mothers and young children and school dental service. Salary in accordance with Whitley scale £800 x £50—£1,250 p.a. inclusive. Established, subject to medical assessment and prescribed conditions. Applications (no forms) stating age, qualifications, experience, two referees to the Area Medical Officer, Area Health Office, Local County Offices, Somerset Road, Tottenham, N.17, by September 4 (quoting J.685, *B.D.J.*). Canvassing disqualifies. C. W. Radcliffe, Clerk of the County Council.

COUNTY Borough of Rotherham. Applications are invited from persons holding a registrable qualification in dental surgery for the position of ASSISTANT DENTAL SURGEON. Salary on the scale £800 x £50 to £1,250 per annum. Forms of application may be obtained from the Medical Officer of Health, Municipal Offices, Rotherham, and must be returned to the undersigned, endorsed "Assistant Dental Surgeon," as soon as possible. Canvassing will disqualify. John S. Wall, Town Clerk. Municipal Offices, Rotherham.

DENBIGHSHIRE County Council. Appointment of whole-time COUNTY DENTAL OFFICERS. Applications are invited from registered Dental Surgeons for the above appointments. Salary in accordance with the Dental Whitley Council (Local Authorities), £800 per annum, rising by annual increments of £50 to a maximum of £1,250 per annum; the Council has discretion to determine the commencing salary in accordance with the candidate's experience. Travelling and subsistence allowances will be paid according to the Council's scale. The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, as modified by the National Health Service (Superannuation) Regulations, and the successful candidates must pass a medical examination. Forms of application, with particulars of the duties and conditions of appointment, may be obtained from me. Completed applications, with copies of one recent testimonial and the names of two referees should be received by me not later than August 31, 1951. W. E. Bufton, Clerk of the County Council. County Offices, Ruthin. August, 1951.

WALSALL Education Committee. Appointment of School Dentists. Applications are invited from Dental Surgeons (men or women) for the posts of full-time SCHOOL DENTISTS. There are two vacancies. The salary is £800 a year rising by yearly increments of £50 to a maximum of £1,250 a year. In fixing the point of entry to the scale the Education Committee will have regard to the length of service of the successful candidate in dental practice up to a maximum of five years. The candidates appointed will work under the administrative direction of the School Medical Officer and the Senior School Dental Officer, and will be required to give their whole time to the duties of the post. Further particulars of the duties and terms and conditions of the appointment may be had on application to the undersigned. Applications, giving full details of age, training, qualifications, and experience, and accompanied by copies of testimonials, should reach this office not later than fourteen days after the appearance of this advertisement. V. J. Moore, Director of Education. Education Offices, Darwall Street, Walsall. July 31, 1951.

CITY of Norwich. Applications for the posts of ASSISTANT SCHOOL DENTAL OFFICERS are invited from registered Dental Surgeons, male or female. Salary Scale £800 per annum rising by annual increments of £50 to £1,250 per annum. Particulars can be obtained from the Medical Officer of Health, 68, St. Giles' Street, Norwich.

CITY of Birmingham Education Committee. School Health Service. Appointment of three SCHOOL DENTAL SURGEONS. Applications are invited from Dental Surgeons (male or female) for full-time appointment in the School Health Service. Salary £800, rising by annual increments of £50, to £1,250. The commencing salary will be fixed at a point on the scale according to experience. Further particulars and form of application may be obtained on receipt of a stamped addressed foolscap envelope. Completed applications should be returned by September 1. Canvassing will disqualify. E. L. Russell, Chief Education Officer. Education Office, 74/5, Broad Street, Birmingham, 15. July 18, 1951.

COUNTY Borough of Huddersfield. ASSISTANT DENTAL OFFICERS required. The duties include the inspection and treatment of school children and other priority cases. Salary £800 per annum, rising by annual increments of £50 to a maximum of £1,250 per annum, the employing Authority having discretion to allow one increment for each year of experience in practice, up to a maximum of 5 years. The post is a superannuated one and the appointment will be subject to the provisions of the Local Government Superannuation Acts, and to a satisfactory medical examination. Applications stating qualifications and experience, together with copies of three recent testimonials, should be submitted to the Chief School Medical Officer, School Health Service, Health Department, Huddersfield, not later than September 1, 1951.

COUNTY Borough of Oldham Education Committee. Appointment of DENTAL OFFICER. Applications are invited from registered Dental Surgeons (male or female) for the above appointment. The salary and conditions of service will be in accordance with the recommendations of the Dental Whitley Council (Local Authorities), i.e. £800 x £50—£1,250 per annum. Previous experience will be taken into consideration when fixing the commencing salary. The officer appointed will be under the immediate supervision of the Chief Dental Officer and the duties will be in connection with the School Health and possibly Maternity and Child Welfare Dental Services. The appointment is superannuable and the successful candidate will be required to pass a medical examination. Application forms can be obtained from the School Medical Officer, Public Health Department, Town Hall, Oldham, on receipt of a stamped addressed envelope, and should be returned to the undersigned together with copies of three recent testimonials within fourteen days of the appearance of this advertisement. Maurice Harrison, Director of Education. Education Offices, Union Street West, Oldham. August 2, 1951.

COUNTY Borough of Dudley. Appointment of DENTAL OFFICER. Applications are invited for the above whole-time appointment at a salary of £800 per annum, by annual increments of £50, to £1,250 per annum. The appointment will be superannuable and a car allowance will be payable on the Council's Scale. Favourable consideration will be given to the provision of housing accommodation. Applications, together with copies of two recent testimonials and the names and addresses of two referees should reach the undersigned not later than August 25, 1951. P. D. Wadsorth, Town Clerk. The Council House, Dudley. August 1, 1951.

KINGSTON UPON HULL Education Committee. Applications are invited from candidates, men or women, for appointment as whole-time DENTAL OFFICERS. Salary £800 x £50 to £1,250 per annum. Commencing salary will be adjusted according to experience as a school dental officer and increments (to a maximum of five) may be allowed for experience in practice. Duties will be mainly in connection with treatment of school children but will also include similar duties under other health services, e.g. Maternity and Child Welfare Service. Particulars and application forms (to be returned as soon as possible) obtainable from the Deputy Director of Education, Guildhall, Kingston upon Hull.

CITY of Birmingham. Public Health Department. Appointment of whole-time Dental Officer. Applications are invited for the appointment of whole-time DENTAL OFFICER in the Maternity and Child Welfare Department whose duties will be concerned with the dental inspection and treatment of expectant and nursing mothers and young children, up to the age of five years. The salary scale will be £800 x £50—£1,250 per annum, with placement on the scale according to experience, up to a maximum of five years. The appointment, which will be terminable by one month's notice on either side, will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination. Applications, stating qualifications and experience, together with the names of three referees, should be sent to the Medical Officer of Health, Public Health Department, Congreve Street, Birmingham 3, not later than September 1, 1951.

COUNTY Borough of Wallasey. Appointment of Dental Officer. Applications are invited from registered Practitioners for the post of DENTAL OFFICER. Salary £800 x £50—£1,250 per annum—commencing salary according to previous experience. The successful candidate will be required to devote the whole of his time to the work of the Authority, which will include dentistry for the School Health and the Maternity and Child Welfare Services. The duties will be carried out under the supervision of the Senior Dental Officer and the Medical Officer of Health. The appointment is subject to medical examination and to the provisions of the Local Government Superannuation Act, 1937, as modified by the National Health Service (Superannuation) Regulations, 1947. Applications, with copies of three recent testimonials, or the names of three referees, to: The Medical Officer of Health, Town Hall, Wallasey. A. G. Harrison, Town Clerk.

BERKSHIRE Education Committee. Assistant School Dental Officers. Applications are invited from registered Dental Surgeons for posts as ASSISTANT SCHOOL DENTAL OFFICERS. The persons appointed will be required to devote their whole time to the duties and to act under the direction of the School Medical Officer and the Senior School Dental Officer. The salary scale is £800 rising by annual increments of £50 to £1,250, and the appointments will be subject to the provisions of the Local Government Superannuation Act. 1937. Placement on scale will be according to experience. Further particulars and forms of application may be obtained from the School Medical Officer, 11, Abbot's Walk, Reading, and should be returned to him within 14 days of the appearance of this notice, together with copies of three recent testimonials. Applicants must disclose in their applications whether, to their knowledge, they are related to any member of or holder of any senior office under the Council. Canvassing, either directly or indirectly, will be a disqualification. E. R. Davies, Clerk of the County Council. Shire Hall, Reading. July, 1951.

CITY of Birmingham. Public Health Department. Appointment of part-time Dental Officer. Applications are invited for the appointment of PART-TIME DENTAL OFFICER in the Maternity and Child Welfare Department, whose duties will be concerned with the dental inspection and treatment of expectant and nursing mothers and young children, up to the age of five years. Remuneration will be three guineas to four guineas per session, according to experience. The appointment will be terminable by one month's notice on either side. Applications, stating qualifications and experience, together with the names of three referees should be sent to the Medical Officer of Health, Public Health Department, Congreve Street, Birmingham 3, not later than September 1, 1951.

THE London Hospital has a vacancy for a DENTAL ASSISTANT. Applicants should either have taken the recognised training course or have had practical experience of the work. Salary according to age and experience. Apply in writing giving full details to the Matron, London Hospital, Whitechapel, E.1.

PRACTICES

Available

BOLTON, Lancs. Qualified family practice for sale. Established 50 years. Two surgeries, modern equipment. Experienced mechanic would be willing to continue to work on the premises.—Box 751.

NEAR Edinburgh. Practice embracing three nearby villages, at present worked single handed; turnover about £10,000 p.a. Minimum capital required £750 each surgery.—Box 753.

HERTS. Lock-up practice fully equipped. Turnover exceeding £4,000. Charming house a few miles out in the country available. £6,000.—Box 755.

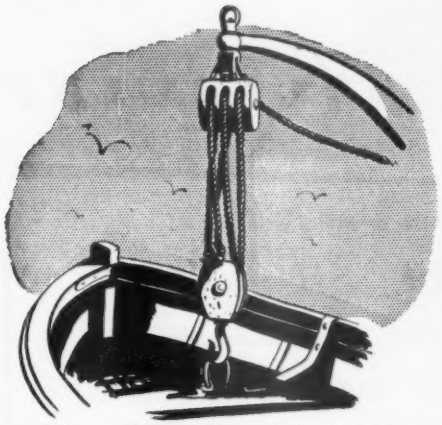
SUSSEX Coast Town. Freehold house, 2 equipped surgeries, furnished waiting room, laboratory; ample living accommodation. Good residential district—Main road. Established over 30 years. Owner retiring owing to ill-health. All at £4,800.—Box 757.

FOR Sale. Dental practice established 40 years. Main road, Manchester, near town. Excellent residential accommodation. House on rental.—Box 759.

SOUTH Coast resort. Old established practice for sale. Turnover 1949, £4,460; 1950, £5,843; 19 years' lease, rent £204. Death vacancy. Price £3,500 for Goodwill and Lease and up to date equipment. Also if desired freehold house in excellent residential area.—Box 761.

SOUTH Africa. Well established dental practice for sale in the heart of Johannesburg—the largest city in the country—with ideal climate. Rooms situated in professional building consist of waiting room, two surgeries equipped with Ritter units, X-ray machine, etc., laboratory. Own mechanic employed. Turnover exceeds £1,000 per month. No shortages either professional or domestic. Further particulars write "Dental," Box 4887, Johannesburg, South Africa.

ESTABLISHED dental practice near Southend. Rent £350 p.a. inclusive. No living accommodation, but local property could be purchased nearby. James Abbott & Co., Surveyors & Valuers, 132, High Street, Southend-on-Sea.



SECURITY

Complete confidence comes from knowing that one's denture is undetectable under all circumstances. The skill of the dentist with modern denture materials has made possible a natural, unobtrusive appearance, but perfect control during speech and mastication takes time to acquire. 'Kolynos' Denture Fixative gives immediate security, both actual and mental. A light sprinkling over the tissue-contacting surfaces provides a firm suction-seal, removing any possibility of dislodgement. 'Kolynos' Denture Fixative is tasteless and odourless and non-irritant to tissues.

Professional samples of 'Kolynos' Denture Fixative will gladly be sent upon request to members of the dental profession, free of charge.

KOLYNOS
DENTURE FIXATIVE

INTERNATIONAL CHEMICAL COMPANY LIMITED, CHENIES STREET, W.C.1

N.W. MIDDLESEX, 10 miles London, good residential district. Busy practice, gross £7,000, no Saturdays or Sundays, hours 10 to 6. Freehold house £5,000, practice £3,000. Owner retiring.—Box 587.

FOR sale. Lancashire seaside resort qualified dental practice, established two years. House valued at £3,500. Equipment and stock, £1,000. Surgery comprises complete Sterling unit, chair, etc.; price asked £4,500. Reason for sale, ill-health.—Box 614.

OLD established practice for sale in congenial London suburb. Average turnover before National Health, £3,444 p.a. Last three years average over £7,000. Two well equipped surgeries and workroom. Ample private and professional accommodation.—Box 618.

COMMODIOUS lock-up practice, large staff, efficiently run, about £10,000 turnover. Residential area Cheshire near Manchester. Low expenses. Qualified assistant. Owner going abroad. Will sell for any fair cash offer.—Box 620.

Wanted

L.D.S. Liverpool 1940, keen conservative worker, 5½ years' private and N.H.S. experience, wishes to purchase practice with family accommodation. Would consider managership or partnership with view to early succession.—Box 763.

DENTAL Surgeon, qualified 10 years, and desiring to buy a practice wishes to contact practitioner retiring in about one year. Country town preferred.—Box 765.

SMALL practice or partnership required in country town or on South Coast by experienced dental surgeon.—Box 767.

HOUSES AND PROFESSIONAL ACCOMMODATION

Available

GOOD opportunity setting up practice, Medway Valley. Growing population, no resident dentist. Medium sized house available. Acceptable terms granted to right man.—Box 769.

WALTHAM Cross, Herts. Residence and self-contained surgery and offices. Comprising 4 bedrooms, 3 reception rooms, usual offices, garage and secluded garden; surgery, two waiting rooms, large drawing office, cloakroom etc. Formerly occupied by Dental Practitioner, now by Medical and Architectural Practitioners moving to larger accommodation. Unlimited scope and no opposition for Dentist. Reasonable price for quick sale. 207, Turners Hill, Cheshunt, Herts. Waltham Cross 4122.

CLAPHAM Junction. Large corner house completely fitted and until recently used as a Dental Surgery and residence. Lease 9 years. G.R. £8 8s. p.a. Price vacant £750. Equipment if required at valuation. Apply, Moreton Riches, 92, East Hill, Wandsworth, S.W.18. Tel. Vandyke 4166/7.

SUITABLE for Dentist. Edmonton (adjoining the "Regal"). First floor suite of offices in professional house. All conveniences. Rent on lease £200 exl. Sole agent: W. A. Shersby, 297, Hertford Road, Edmonton. Telephone HOWard 1864/5.

ACCOMMODATION to let in high class Pharmacy, Kensington High Street, suitable for Dental practice. Moderate rental. All facilities.—Box 771.

TO LET. Two rooms and waiting room, ground floor, separate gas, electricity, water, situated centre shopping area. Available upon lease, no premium required. Miller, 67, High Street, Chislehurst. Imperial 1687.

Wanted

HOUSE or flat required for dental surgery on or near South Coast.—Box 773.

APPOINTMENTS

Vacant

BALHAM area. Dentist to manage practice. Permanent position. Must be keen and good conservative worker.—Box 775.

ASSISTANT required, with or without view to partnership, in good class conservative practice near Birmingham. Good salary and commission. Full staff. Good prospect for progressive man.—Box 777.

WANTED. Assistant for good class practice from September. Unfurnished flat available. Apply 30, Beaumont Street, Oxford.

NOTTS. Assistant required in busy, old established, industrial and private practice. High proportion conservative work, every consideration to good team worker. Many amenities, golf, sailing, Rugger etc. Remuneration according to experience; attractive in any case.—Box 779.

ABERDEEN (West End) vacancy for keen conscientious worker in three-chair practice. Permanency for suitable applicant, work predominantly conservative. State nationality, age, general and professional education, experience and when available.—Box 781.

WEST Sussex Coast. Young assistant required for busy N.H.S. practice. Apply with full details to—Box 783.

ASSISTANT required for old established County type practice in Somerset city, mainly conservative work. State experience and commencing salary.—Box 785.

RITTER **EQUIPMENT**

It is with great pride that we announce the opening of our

RITTER EQUIPMENT SHOWROOM

at 16 Marylebone Mews, New Cavendish Street, London, W.1, where this world famous equipment can be seen. Its quality and beauty is, as always in the past, supreme.

Sole U.K. Distributors:

L. PORRO LTD.,

64 New Cavendish Street, London, W.1. Phone: LANgham 1881 (4 lines)

DENTAL Surgeon required for Sheffield practice (Central). Complete clinical freedom to conscientious worker. Highest remuneration.—Box 787.

PRIVATE practice—no N.H.S. Keen assistant required with view to partnership in old established practice (Surrey). Must be interested in good work. Good prospects. Scope for initiative (Principal 43).—Box 789.

WANTED. Assistant with view to partnership required in Watford practice. Three surgeries. Apply L. Catchpole, 74, St. Albans Road, Watford 4694.

ASSISTANT with or without view to partnership required immediately, South-East Coast town. High class conservative, orthodontic practice, with about 36 per cent private practice and Hospital Appointment fees. Four modern equipped surgeries. Three partners, senior retiring soon. State personal details, qualifications, experience and salary required.—Box 791.

ASSISTANT Dental Surgeon required for twelve months, view to permanency and possible partnership. Must be capable of taking complete charge of surgery in Principal's absence. Large surgery with modern equipment. S.W. London. Salary and commission.—Box 793.

ASSISTANT with view to partnership required for old established good middle class practice in Northamptonshire. Work largely conservative. Excellent opportunity for keen worker.—Box 795.

WANTED. Assistant to manage congenial practice in Watford. Permanency and good salary to suitable man.—Box 797.

CROYDON area. Assistant Dental Surgeon required for very good practice. Every chairside assistance, complete clinical freedom, no clerical work, pleasant conditions, first class equipment and workroom, highest salary and commission.—Box 664.

SOUTHERN Rhodesia. Assistant required in good class practice, age under 30. Generous terms to conscientious and willing worker. Full particulars and photograph to—Box 666.

DENTAL Surgeon required as assistant in Shropshire market town. Good salary, plus bonus. Five-day week.—Box 736.

SUBURBAN London practice, 9 surgeries, large workshop, in building adapted as clinic, has vacancies for full, part-time, evening and week-end operators. Full clinical autonomy, competitive remuneration. Keenness, amity and reasonable production essential.—Box 2112.

LICENTIATE required as soon as possible with view partnership. Male only. Good class Practice. Peterborough.—Box 634

WANTED. Fully qualified Dental Surgeon, as Locum for 6 months, for first class practice (Colchester). Experience in Orthodontics and gold work necessary.—Box 799.

DENTAL Surgeon wanted as Locum, September, Kent.—Box 801.

PART time assistant required for good class practice in Croydon area. All latest equipment and methods. Minimum period six months. High salary.—Box 591.

Wanted

DENTAL Surgeon, L.D.S., requires assistantship with view on release from R.A.F. early March. Accommodation for wife and child preferred but not essential. Anywhere considered.—Box 803.

DENTAL Surgeon seeks permanency with firm running own dental clinic.—Box 805.

LADY Dental Surgeon, D.D.D., middle-aged, experienced, requires assistantship Manchester/Stockport area.—Box 807.

EXPERIENCED Dental Surgeon, semi-retired, invites employment offers. Devon, Somerset, Dorset. Free September. Would consider part-time assistantship; management or purchase of small practice.—Box 809.

EXPERIENCED Dental Surgeon requires assistantship in mixed practice in Southern England. Please state salary offered.—Box 811.

CONSCIENTIOUS and capable young Dental Surgeon seeks assistantship in London. 5-day week.—Box 813.

A POSITION with genuine prospect of partnership and/or succession, after agreed trial period, is sought by L.D.S. Guy's, 1939. Good equipment and surroundings of more importance than high remuneration.—Box 815.

ORTHODONTIC patients. Specialist would be pleased to accept N.H.S. orthodontic cases from colleagues. N.E. coast. Phone North Shields 2408 or write—Box 1413.

YOUNG Dental Surgeon would assist or manage up to mid-October. Would consider long/short locums London, where skill, tact and speed appreciated.—Box 817.

LADY B.D.S. (24), some hospital and practice experience, requires locum work September 17 to October 15, within daily reach Orpington.—Box 819.

LOCUM available from September 10 for at least 2 weeks; well qualified; pleasant district required.—Box 821.

WANTED. Locum by experienced foreign dentist, M.D., preferably in hospital or private practice. Long hospital experience in England; available from August 20.—Box 823.

SITUATIONS

Vacant

DEMONSTRATOR. Dental Fillings Limited have vacancy for gentleman to demonstrate their products throughout British Isles. Salary and expenses only, no commission. Applications with full particulars to 49, Grayling Road, N.16.

EXPANSION Glenross SCREWS

Regd.

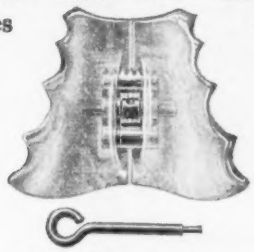
REMAIN RIGID *to their* FULLEST EXPANSION

Absolute certainty of

PARALLEL OPENING *with* NO ECCENTRIC MOVEMENT

Ensures 100% Efficiency

LARGE
(Actual Size)



SMALL
(Actual Size)

From Sole Manufacturers:

GLENROSS LTD. 32/34, RIDING HOUSE STREET, LONDON, W.1

And Trade Distributors.

Registered Design Nos. 854826, 860918 **Telephone: MUSeum 3211** *Patents No.* 641139

Wanted

DENTAL technician, Grade I, all classes of work, requires post any district, from September 1.—Box 827.

DENTAL technician, Grade I (single), seeks post in London area.—Box 829.

DENTAL technician, single, seeks situation. Keen, 18 years' experience, gold, porcelain, orthodontics, plastics. Midlands, South or South West.—Box 831.

DENTIST'S widow with extensive experience of running a practice requires post as receptionist. London practice preferred.—Box 833.

GRAVESEND, Kent. Young lady, age 19½ years, seeks situation to train as dental nurse secretary. WB 394, Dental Nurses Society, 2, Sumner Street, Leyland, Lancs.

MISCELLANEOUS

NEGOTIATIONS for practices and partnerships confidentially conducted. Particulars of available propositions upon application. Also register of Assistants, Locums, Secretaries and Mechanics. All inquiries receive prompt and individual attention.—Cottrell & Co., 15-17, Charlotte Street, London, W.1.

MADEIRA means a perfect sunshine holiday. Ideal all the year round, wonderful bathing, beautiful flowers. Tennis, Golf and other sports. Comfortable hotels from 17s. 6d. per day. From Southampton by Aquila Airways or Union Castle Steamship Co. Further details from Delegacao de Turismo da Madeira—Funchal or Travel Agents.

DENTAL chairside assistants and trainees supplied. Please ring M. & S. Employment Agency, 32, Queen Victoria Street, E.C.4. CITy 7131 (3 lines).

BOOKS

"DENTAL Laboratory Techniques 1951." A new book for dental technicians. Contents: Design and Construction of Partial Dentures Externally Retained; Crown and Bridge Work; Soldering, Fluxes and Techniques; Setting-Up; Dental Electro-Forming and Plating. A complete manual of these subjects. Stiff bound, fully illustrated. Price 7s. 6d. (postage 9d.), ready September. The edition is limited—orders taken in strict rotation. Send name and address and remittance for 8s. 3d. to The "Dental Technician" Ltd., 329, Gray's Inn Road, London, W.C.1.

WANTED to buy. Old Dental Books. Orthodontia prior to 1914. Angie Orthodontia Journals. Leo. L. Bruder, 1, De Kalb Avenue, Brooklyn 1, N.Y., U.S.A.

MOTOR CARS

COVENANT-FREE car wanted from private owner. Write Harding, 113, Highlands Heath, London, S.W.15, or 'phone TULse Hill 4489 (day).

EQUIPMENT

For Sale

RITTER dental engine 100/105 v. entirely reconditioned and enamelled, in perfect order, £40; Rayway spittoon, water syringe, opal bowl, little used, £20. Delivery of unit only reason for sale.—Box 835.

RITTER wall bracket engine 230 A.C., little used, £50; spittoon on stand with bracket table; large cabinet; student's cabinet; foot engine, aseptic table, violet ray. Offers.—Box 837.

HARROGATE. Rathbone No. 3 Unit, Ivory Tan, 200 volts A.C. Completely recellulosed and rechromed. Perfect working order and appearance. Has been regularly serviced. Available August.—Box 839.

FOR sale. Sterling single-cylinder dental chair. Black and chrome. First class condition. £100. "Norton," Netley Street, S. Farnborough, Hants. Phone 257.

FOR sale—new condition—"Jectaflo" Gas/Oxygen Apparatus, D.M.C. Electric Steriliser, Cottrell Portable Unit and Stand, Kelvin-Hughes Shadowless Lamp. Offers. Seen Birmingham.—Box 841.

FOR sale. Castle PanoVision surgery light, £60; Porro's No. 5 Dental Cabinet with strip lighting, £70; large roll top desk, £35. Can be seen London.—Box 843.

FOR sale, McKesson "Simplor" Gas/Oxygen Apparatus as new. £70 or nearest offer.—Box 845.

I wish to dispose of practically new Sterling unit, cream and chrome, 230 volts A.C. Mounted operating light. Also Ritter four-point light. 'Phone SLOane 3636.

FOR sale. Sterling operating light, wall pattern, ivory tan, £25; Walton No. 3 gas/oxygen outfit, ivory tan, £60; Locker pattern aseptic table, £8 10s.; De Trey spittoon on stand, mahogany enamel, £10 10s.; S.S.W. folding bracket and table, bracket black, £8 10s.; Pelton electric steriliser, £8.—Box 730.

FOR sale. Ritter D.2 X-ray unit in perfect condition, £45.—Box 732.

HAVE YOU SEEN—

THE NEW

METRODENT

SURGERY DRESSES

YOUR SURGERY ASSISTANT WILL COVET ONE OF THESE

Please send for one on approval stating bust measurement

METRODENT LTD.

39a, WELBECK STREET, **LONDON**, W.1
78, JOHN WILLIAM STREET, **HUDDERSFIELD**
464, CHESTER ROAD, **MANCHESTER**, 16

Wanted

WANTED. "Kavo" reducing gear for No. 2 slip-joint handpiece.—Box 847.

TRADE ANNOUNCEMENTS

FOR better impressions use Dentrex Pink Impression Plaster. Colour contrast—minimum expansion—rapid set. Trial 10 lb. tin at 8s. 6d., 28 lb. at 16s., 56 lb. at 30s. (plus 5s. returnable container). F. Jones & Co. (Dental Requisites) Ltd., Dentrex House, 360, Romford Road, London, E.7. Phone MARyland 1037/8.

KAVO Handpieces, Calxyl, Silver Points, Antæos Nerve Extractors, Rattailed Files, Post pullers, Dusseldorf Burs, original Automaton, U.S.A. Heatless Wheels, Jiffy Tubes, Root Fillers. Neosex Ltd., 102a, Cricklewood Broadway, London, N.W.2.

DENTAL Mechanics' White medical orderlies' Overalls, ex-government. Part worn but excellent quality and condition, 7s. 6d. Landers, King's Road, St. Leonards on Sea.

WELDING of broken metal dentures without removing plastic or porcelain (Rakos Patent). Plates, bars, retentions, additions, etc. 24 hour service. A. S. Rakos, 100, Fellows Road, London, N.W.3. Tel.: PRImrose 0992.

THE Correct Manipulation of dental materials ensures best results. You or your dental assistant can now see the manufacturer's recommended techniques for: "Zelex," the original alginate impression material in its new form: "Stellon" Denture Material; "Stellon" C (acrylic material for crowns and reproductions of patient's own teeth); the new Natural Tooth Tones of "Syntrex" (De Trey's Synthetic Porcelain), and other leading filling materials. The demonstration is given by a member of the Technical Division of the Amalgamated Dental Co., Ltd., at 12, Swallow Street, Piccadilly, London, W.1. Telephone the Manager, Demonstration Department (REGent 2201) for an appointment.

NEW, reconditioned and secondhand dental equipment for surgery and laboratory available for immediate delivery from stock. Units, chairs, X-ray units, cabinets, Wall bracket engines, spittoons, sterilisers, vulcanisers, etc., and miscellaneous instruments; also Government Surplus chairs, spittoons, shadow-less lights, engines, etc. All equipment is issued with a Certificate of test by our Service department. B. Rosen (Dental Depot) Ltd., 4, Great North Road, Newcastle-upon-Tyne, 2.

WASTE amalgam wanted, 4s. to 5s. per lb. paid according to quantity, also old gold clad pins 27s. 6d. to 30s. an oz. paid.—Manchester Dental Co. Ltd., 1, Todd Street, Manchester, 3.

THE Denclen Method of maintenance for Plastic Dentures was first designed to meet the requirements of the artistically sensitive Dentist (and patient). Something had to be found which would: (a) Remove stains instantly from between front teeth: and (b) preserve the gloss imparted to Plastic Anteriors by the workroom buff. The answer was "Denclen." Economical and harmless, it imparts a smooth freshness to the denture which delights the wearer. Professional samples and details on request to: Krauth Chemicals Ltd., 18, Walton Lane, Weybridge, Surrey. Suppliers to the Dental Profession and Trade: J. S. Cottrell & Co., 15-17, Charlotte Street, W.1.

DENTAL Surgeons' coats. Best quality shrunk white drill, style to button on shoulder and down side, half belt at back, 39s. 11d.; S.B. white jackets, 31s. 8d.; Ladies' white belted overalls, long sleeves, SW 23s. 2d., W & WX 25s. 3d., OS 28s. 2d., postage 1s., sent on approval. Send for lists of overall garments. Ernest Draper & Co., Dept. "J," Northampton.

"RECTAFLO" Gas/Oxygen Apparatus. The principle and method of operating this most modern of machines for dental anæsthesia can be demonstrated *in your surgery* by appointment, or at the Demonstration Hall, The Amalgamated Dental Co. Ltd., 12, Swallow Street, Piccadilly, London, W.1. The simple technique of taking radiographs of outstanding diagnostic value with the STERLING X-RAY UNIT can also be shown in the Demonstration Hall. Let us know your wishes and we will make the necessary arrangements. Write the Manager, Demonstration Department, at the address given, or telephone REGent 2201.

NAPKINS available in 9 in. x 9 in. and 6 in., at lowest prices. Also Cotton Wool Rolls, Mouthpacks, Cotton Wool, Towels, etc. Good deliveries. Please send your enquiries to the Manchester Dental Co. Ltd., 1, Todd Street, Manchester, 3.

SHELL-CROWNS permanent from toughest acrylic, anatomical forms, multitone shades. Fascinating simplicity of precision technique. Central to Molar in 11 moulds and 6 shades. Literature now available. Also Colour-Constant cold-curing acrylics, famous Swiss products: Poly-Plast for filling, cementing; Protho-plast for denture quick repair, relining, etc. Ask for literature. Obtainable from your Dental Depot or Sole Wholesale Agents: J. R. Marsh & Co. Ltd., 100, Fellows Road, London, N.W.3. Trade enquiries invited.

DENTAL LABORATORIES

LABORATORIES are invited to submit their Price Lists. Busy Practice North West London.—Box 849.

ASHLEY Dental Laboratories, 431, Oxford Street, W.1. MAY 0830, Technical Advisers to Dental Manufacturing Co., Ltd., for high-class prosthetic Dentistry.

STANLEY C. Haggith, dental technician to the Profession, 81, Chapel Field Road, Norwich, can undertake further mechanical work, which will receive prompt and careful attention with a high standard of craftsmanship. Price list on application. Tel.: Norwich 25635.

H. & M. Dental Laboratories, specialist craftsmen, execute commissions with skilful precision and speed in all branches. 116-117, Holborn, London, E.C.1. (HOLborn 4877).

K.D.L. Kensington Dental Laboratories, 17, Victoria Grove, London, W.8. West London's Premier Technicians. We undertake every phase of Dental Prosthetics. Skilled Mechanics. Good Messenger Service. "Ring up K.D.L. WEStern 1796."

LONG & Holder, Dental Laboratory, 22, Alexandra Gardens, Muswell Hill, London, N.10. First-class workmanship in all branches of Prosthetics. Specialists in Orthodontic appliances and Stainless Steel. Telephone TUDor 4802. Established 1927.

PORCELAIN Jacket Crowns and Inlays, removable and fixed bridge work with precision attachments our speciality. All enquiries welcome. Spencer & Natt, Ltd., 10, Harley Street, W.1. LANgham 3921/5348.

TAYLORS' Dental Laboratories, 326, Oxford Road, Manchester, 13, offer same faultless workmanship as before. Reduced price list by return. Guaranteed three day messenger service. Ten miles radius; five-day country-wide postal service. 'Phone Ardwick 2167.

FAST REPAIRS

Expert re-conditioning of all dental equipment.

Ring or Write

DENTAL EQUIPMENT & MAINTENANCE LTD.

8 SMITH'S COURT, LONDON, W.1

PHONE **GERRARD 5119**

XYLOTOX

Supplies of the interesting new anæsthetic drug

w – diethylamino – 2.6. – dimethyl-acetanilide★

treated by the Novutox cold sterilising process

are now available as follows

CARTRIDGES
(*Standard Size*)

'Xylotox 2% E.80' (*epinephrine 1:80,000*)
Boxes of 20 ..... 9/6d. each

BOTTLES
(*1 oz. rubber-capped*)

'Xylotox 2% E.80' (*epinephrine 1:80,000*)
„ „ S.E.' (*without epinephrine*)

Cartons each containing 6×1 oz. bottles ..... 21/- each

★ *Brit. Dent. J.* (1950) 88, 214 *Svensk. Tandlak. Tidskr.* (1947) 40, 831.

P.M.C.

PHARMACEUTICAL MANUFACTURING CO., THE LABORATORIES, CHELTENHAM, GLOS.

Made by
THE TAMPLIN EQUIPMENT CO. LTD.
BIRDHAM

The Murray Stool

is the perfect answer to that "leg weariness" which all too often comes at the end of a long day's work in the Surgery. It has been found that the saving in energy is remarkable, as standing and walking to and fro around the chair are no longer necessary.

Obtainable from :—

THE WESTERN DENTAL MFG. CO. LTD.

81 PARK STREET, BRISTOL (Tel. 24491) & **44 CHARLES STREET, CARDIFF - (Tel. 204)**

DICA BURS Save time

DICA DIAMOND BURS

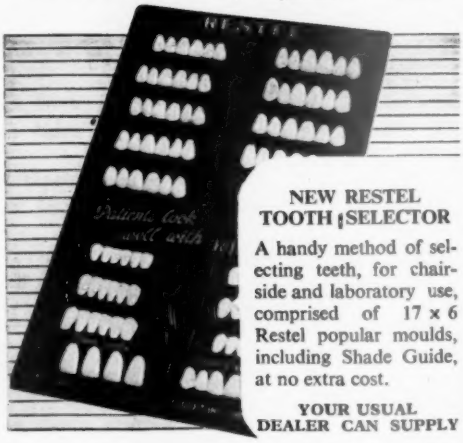
Available through your depot

BRITISH DENTAL GOLDS LTD

Manufacturers of fine Dental Golds and alloys

105 BOLSOVER STREET, LONDON, W.1 MUS. 1911

THE HARDEST, STRONGEST *Acrylic* TEETH



NEW RESTEL TOOTH SELECTOR

A handy method of selecting teeth, for chair-side and laboratory use, comprised of 17 x 6 Restel popular moulds, including Shade Guide, at no extra cost.

YOUR USUAL DEALER CAN SUPPLY

RESTEL *Acrylic* TEETH

BRITISH TECHNICAL PLASTICS LTD.
Mason Avenue, Whitley Bay, Northumberland

R.T.11.

Wall Bracket Model

Don't suffer with eye-strain this coming winter, install the—

Sterling OPERATING LIGHT

The Sterling Operating Light floods the patient's mouth with glareless, shadowless light. The light also has a valuable daylight quality which permits accurate matching of shades and colours and is extremely kind to the eyes. This natural quality is achieved by colour correcting filters which at the same time absorb the heat rays keeping the light cool. The light is quickly adjusted to suit various distances by means of a simple focusing mount at the back of the lamp holder.

Unit Model

Three models are available as illustrated.

The Unit Model, seen at left, has a fully adjustable bracket of special design for fitting on the Sterling Dental Unit.

All models of the Sterling Operating Light are obtainable in the usual standard finishes—Black, White, Cream, Ivory Tan, Neptune Green and Sterling Grey.

Mobile Model

Order your Sterling OPERATING LIGHT NOW!

THE AMALGAMATED DENTAL COMPANY LIMITED, LONDON, W. 1

If you supplied a book of instructions with new dentures...

... you would certainly include a section dealing with such traditional cleaning methods as steeping, rinsing and brushing.

It is, however suggested that the method that most merits your professional endorsement is that of "oxygen-cleaning" with Steradent.

THE EFFECT OF "OXYGEN-CLEANING"

After immersion in a Steradent solution the entire plate is disinfected and deodorised: freed from stain —by oxygen action which, as you know, is safe, gentle, thorough. To complete the removal of film, brushing and rinsing under the tap is advised.

Steradent REG.

Specially made to "oxygen-clean" dentures

A product of RECKITT & COLMAN LTD.

SVEDION IS *NOT A NEW METAL OR AN UNTRIED DEVELOPMENT* but has been used for years all over the world. Over 1,000,000 cases have been made.

"SVEDION" PLANT OVERSEAS

FIRST—C. COBALT MOLYBDENUM ALLOY TO BE APPROVED BY THE MINISTRY OF HEALTH FOR USE IN THE NATIONAL HEALTH SERVICE WAS—**SVEDION**

THE ONLY *TRUE* C. COBALT MOLYBDENUM ALLOY IN THIS COUNTRY IS—**SVEDION**

We have the most up-to-date laboratory in the U.K. for casting **SVEDION,** with Manager from a Vitallium (Overseas) Laboratory.

SEND STONE PLASTER IMPRESSION

Air Mail Service for Overseas Clients

Cast dentures delivered approximately 1 week from receipt of impression. **DURROCRYL POLYCHROME ANTERIORS** *WITH STRIATION LINE* JUST BROUGHT ON THE MARKET. Best quality. Mould Chart and Price List on application.

CRISTOBALITE INVESTMENT for Gold and **REFRACTORY INVESTMENT** for Cobalt Castings supplied.

DURROCRYL ACRYLIC DENTURE BASE, most economical, approved by the Ministry of Health. **MOULDS** (hard metal throughout) and installation for Plastic Teeth Producers.

Write for further particulars to :—

SVEDION Central LABORATORY (Proprietors: BALDONT LTD.)

SUPPLIERS TO SEVERAL UNIVERSITIES AND DENTAL SCHOOLS. **(Sole Agents for Svedion in the U.K. & Eire)**

39, CRICKLEWOOD BROADWAY, LONDON, N.W.2

I.C.I.

Dental Products meet the most exacting requirements of the Dental Profession

'KALLODENT'
clear
standard and
natural shades

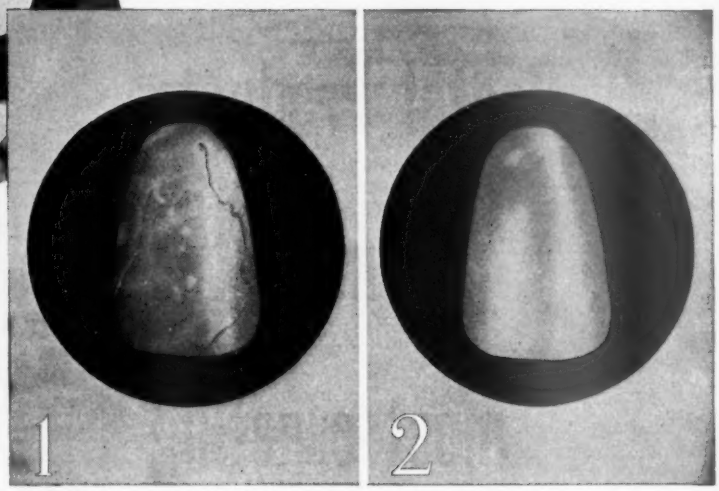
'KALLODENTINE'
basic and
preblend shades

IMPERIAL CHEMICAL INDUSTRIES LIMITED, LONDON, S.W.1

ICI

FK70 A

NEW LIGHT ON TEETH



1 *An ordinary acrylic tooth showing how stress is revealed by the polarimeter.*

2 *A NEW DENTACRYL acrylic tooth appears translucent, passes stress test.*

Controlled polymerisation is the key to perfection in the manufacture of acrylic teeth. The vital factors are time and temperature and, as a matter of interest, DENTACRYL are polymerised for twelve hours. Many other conditions must be satisfied to produce NEW DENTACRYL acrylic teeth which are free from stress and combine high impact strength with resilience and abrasive resistance.

New DENTACRYL ACRYLIC TEETH

DMC LTD

THE DENTAL MANUFACTURING Co., LTD.
BROCK HOUSE • 97 GREAT PORTLAND STREET • LONDON, W.1

THE LARGEST MANUFACTURERS OF ACRYLIC TEETH IN THE WORLD

T5

Face first matter

BRITISH DENTAL JOURNAL

The Journal of the British Dental Association

VOL. XCI AUGUST 21, 1951 No. 4

ORIGINAL COMMUNICATIONS

SYMPOSIUM ON THE PREVENTION OF DENTAL DISEASE[1]

A REVIEW

BY PROFESSOR J. BOYES, F.D.S. R.C.S.ENG.

WITH the present state of our knowledge a discussion on the prevention of dental disease must of necessity range over a wide field and with a representative dental audience participating, it is bound to be controversial. As I see it, conflicting views must be presented for there is still much disagreement on many fundamental points of ætiology, pathology and treatment. It is my purpose in opening this discussion to be brief, to set the stage as it were and give a résumé of the action of the principal players. This prologue will, I hope, enhance the more detailed contributions which will follow and which will form the main and essential part of this symposium.

One of the fundamental facts about dental disease is to be found in its geographic distribution. If a map were to be prepared to show the world-wide incidence of dental caries today we should find that the occurrence of the disease is closely related to the degree of civilisation and in particular to the domestic development of the various communities. It has long been accepted as an axiom that caries is one of the hall-marks of civilised societies.

Further evidence of this relationship is to be obtained from the historical records relating to the disease. As long as man lived simply and spent his time hunting, fishing and tending his small crops of cereals he was caries free. With the developments which led to the greater organisation of society and the consequent easier habits of living with leisure, luxury and sensuous foods, caries made its appearance in the first instance as a disease of the nobility and of the rich. As the centuries rolled by domestic civilisation spread and was embraced by more and more people as the most desirable way of life. In the wake of this progress came caries and today we still find it extending across continents and we now recognise it as one of the commonest of human diseases.

There is no need to pose the question—What is this civilisation factor? It was asked and answered many years ago. It is the diet which is responsible. However, it would be far from the mark to think of caries as a nutritional disease when there can be no doubt that it is a bacterial one. Yet the two must be connected if our evidence so far is correct. But before we proceed to examine the relationship between diet and bacteria and how a diet can influence a bacterial syndrome, let us look for a moment at another fundamental point.

In view of the particular nature of the tooth's structure how can disease affect it? A moment's thought provides the answer. No matter what the disease it can only manifest itself by destroying the tooth. We never observe, in the calcified tissues of the tooth after eruption, the cellular vascular response of inflammation, the formation of neoplasms, specific granulomatous changes, amyloid, fibrous or fatty degeneration to mention but a few diseased states common in other parts of the body. Disease can only alter the erupted tooth by destroying it. It is true that increased calcification is a frequent occurrence but as such it is not an obvious clinical change and, like colour changes, it is an indication of pulp disturbance and, of course, this is outside our present consideration.

If we pursue this enquiry a little further we recognise that the destruction of enamel or dentine can only be brought about by physical or chemical means. We are all familiar with the effect of such gross physical violence as a fall or blow on a tooth which results in its fracture. Even

[1] Papers read at the Annual Meeting of the British Dental Association, London, July 4, 1951

more familiar to us is the much slower physical change which we call abrasion and attrition. Turning to examples of chemical destruction we are aware that in certain industrial processes acid fumes or dusts can leak into the factory atmosphere and in these circumstances the teeth of the workers become eroded, particularly on the labial surface of the maxillary incisors. Another such example is the erosion resulting from the daily use of a chemical tooth-cleaning stick, and we believe that cervical erosion is due to the production of acid adjacent to the necks of the teeth.

Neither physical nor chemical forms of tooth destruction are clinically similar to caries. Histologically there is also dissimilarity and if not the most striking difference, certainly the most significant, is the presence of bacteria in caries and their absence in the other conditions. This is what we should expect, for active caries has never been found in the absence of bacteria. So we are back to the point from which we digressed earlier—the association between bacteria and diet.

Bacteria *per se* cannot destroy teeth. They have no means of mutilating them physically. Bacteria are, however, capable of producing by their metabolism substances which can dissolve the inorganic and organic parts of the tooth. Of the components of enamel and dentine only the organic are capable of supporting bacterial life. There is no need to go into the distribution of the organic parts of enamel for Nasmyth's membrane (the enamel cuticle), the enamel lamellæ and prism sheaths are so well known. But there is a significant point here ; in the first instance the clinical crown is enveloped in the film of organic material—the enamel cuticle—and if what has been said is true it would appear that this membrane should support bacterial growth and so caries should appear at any surface of the tooth. This we know to be a clinical fallacy—there are very definite caries sites on teeth. For a clarification of this point let us refer to that other structure which is a cuticle, namely the skin. We are all familiar with the fact that bacteria can constantly be recovered from normal healthy skin and very frequently some of these are pathogenic. Yet they are not associated with any pathological lesion when obtained. These micro-organisms were probably gaining a poor existence upon desquamated cells and other organic debris upon the surface of the skin and yet there is immediately adjacent the richer organic substance which the normal skin forms. The organisms were not growing in the skin but on it. Why should this be? It would appear that normal healthy cuticle will not permit bacterial growth, but damage it by physical or chemical means and bacteria will grow and produce an inflammatory lesion. This would appear to be the case with the cuticle of the tooth also. Normal healthy cuticle does not support bacterial life. Damage the cuticle and bacteria get their chance. Unlike the cuticle of the skin the enamel cuticle is not replaced. Once it is worn away the enamel is exposed permanently. After teeth have functioned for some time the cuticle is only found in those parts not subjected to the friction of chewing and it is here that we know that caries tends to develop. But the enamel cuticle should form a protective barrier against the invasion of the tooth by bacteria, and so it does as long as it is healthy, and it is I believe rendered unhealthy by the contact of decaying food debris or the plaque lying against it and once it is in such a state the proteolytic organisms digest it and proceed to penetrate the enamel by way of the adjacent lamellæ.

The Dietary Factor

You will have observed that we have at last introduced the dietary factor into the picture. It is the diet which produces the residue which makes the cuticle-damaging factor. When a coarse diet was the staple food, it scraped the teeth and cleaned them. These natural foods did not tend to lie in the crevices, for the jaws of primitive living peoples were well formed and the teeth were regularly placed. If any digestion took place it was around the teeth and it was very slow. The modern soft refined foods all digest easily and rapidly. The foods are squeezed rather than chewed for they are soft and not coarse and fibrous. The highly refined carbohydrates, such as our bread and cakes, produce acid on digestion and this can dissolve the calcium salts in the enamel. The *Bacillus acidophilus odontolyticus* counts rise considerably on such a diet. The food residue packed in the crevices of and between the teeth and in the carious cavities determines the type of bacteria predominating. Sometimes it is proteolytic, sometimes acid producing. But as we have seen, no matter what the micro-organism the only alteration to the tooth is destruction. Consequently it is not surprising that no specific organism has been found to be entirely responsible for caries.

It has been necessary to devote some time to the statement in general terms of the pathology of caries because in the twentieth century there is very little that is empiric in our treatment and the science of pathology is one of the parents of the science of therapeutics.

If we call to mind some of the commoner diseases it is obvious that those caused by bacteria are among the most readily cured. We can create an immunity, as for example against diphtheria and small-pox; with antisera we can control among other things tetanus and gas gangrene; with chemotherapy we can overcome a great many bacterial infections and with a large number of powerful antiseptics we can totally eliminate bacteria for a short period from any part of the surface of the body. Yet despite these various methods there is none effective against caries. We are in fact up against the old problem—the particular nature of the structure of the tooth. The effective difference between caries and other bacterial diseases is that other areas in the body have the advantage of inflammation with the humoral-cellular defence mechanism. The hardness of the tooth's structure is its only defence. It now would appear that the prevention of dental caries should be possible in two ways. The first is by increasing the quality of the tooth thereby increasing its resistance to destruction and the second is by overcoming the bacteria.

As the teeth have to be formed it is logical that they should be formed as perfectly as possible. The deciduous teeth commence to form *in utero*. This emphasises the importance of ante-natal nutrition. It is not sufficient for the mother to ingest an adequate quantity of food. It must be properly digested and then absorbed. It is fortunately well recognised that without a proper dentition and healthy mouth the digestion and absorption are often faulty. In turn the infant and the child must have an adequate nutrition rich in proteins, vitamins and mineral salts for it is from these substances that sound teeth are made. Let us in passing remember the association between childhood fevers and hypoplasia. Once the tooth is formed and erupted it still continues to calcify, although at a slower rate. Diet is thus important over a period of many years. Sodium fluoride is included in this group and is designed to increase the protection of the tooth, whether it is ingested with the fluorinised public water supply or whether it is applied to the surface of the tooth once it has erupted. The application of zinc and silver salts to impregnate the organic pathways is also a protective mechanism. Prophylactic odontotomy is practised by a few and is not to be despised because of its infrequent use.

The building up of tooth resistance is directed to making a normal physiological process as efficient as possible and is largely in the hands of the patient and his parents. This method of seeking prevention is essentially a passive one.

Prophylaxis

The second group contains in my view the more satisfactory methods of prophylaxis—certainly it is the more active. This contains all the methods of actual attack against the bacteria and their products. Primitive man's mouth was certainly not bacteriologically sterile and there is no place in our treatment today for any attempt to render the mouth sterile as this is for all practical purposes an impossible task. The first of this group that I shall mention is keeping the tooth clean. The toothbrush is, of course, the first method of keeping a tooth clean that comes to mind, but we know that the brush is not completely effective in preventing decay. It would be folly to think otherwise, but I cannot help believing that it is the user who should be criticised rather than the instrument, and surprising results might be obtained if it were used correctly. To be successful the five surfaces of each tooth have to be brushed. Everyone in a civilised community requires to use a toothbrush.

The action of the bristles can be enhanced by tooth powders and pastes. Remember that these substances must get in contact with the plaques or carious areas if they are to be effective. To have a refreshed feeling in the mouth after cleaning the teeth is not enough—the teeth must have been brushed clean of all debris. Of all the agents incorporated in tooth-pastes the substances under the searchlight at the moment are the wetting agents and the ammonium ion tooth powder. They are anti-bacterial but let me emphasise it again, they must come in contact with bacteria to be effective.

As has been mentioned, primitive man had his teeth cleaned by diet which he had to chew thoroughly in order to swallow and digest it. Those who stress the importance of the character of the diet have this mechanical factor in mind and also the fact that the soft diet forms an ideal pabulum for the creation of the caries-producing substances. Another member of this group is still in the trial stage. It has considerable possibilities and is designed to neutralise enzymes. In the breakdown of carbohydrates to acid for example there are numerous stages and each stage is dependent upon an enzyme. The present plan is to introduce an enzyme poison which will destroy one or more of these enzymes and if they are not present the breakdown will be halted and the end-product will not be reached. Many think that sodium fluoride works this way as it is known to be a most potent enzyme poison. Vitamin K is another such poison. A natural antibiotic may one day

be discovered which will grow harmlessly at the expense of the lactobacillus and the proteolytic organisms. The secret of immunity has so far eluded us but it might lie in this possibility.

It would seem to me that our present-day method for the prevention of dental decay is to combine the two groups; to have in the first instance sound teeth and in the second place to keep them functioning with food which requires chewing and is nutritious; and to keep them thoroughly clean by thorough brushing after every meal with an appropriate substance.

I have endeavoured to unravel this tangled skein that dental caries and its prevention has become. I believe that I have pulled out the main threads but I leave for others much that is untidy and much to untie.

SOME RECENT EXPERIMENTAL INVESTIGATIONS

By J. D. KING, Ph.D., D.Sc., F.D.S. R.C.S.Eng.

(*Director, Medical Research Council Dental Research Unit, King's College Hospital Medical School, London*)

One of the most notable characteristics of the dental profession in recent years has been its steadily increasing interest in the scientific tools that may be employed for discovering the various factors which govern the onset and progress of dental caries and so-called pyorrhœa. Acceptance of the experimental approach in medical research has played no small part in this beginning evolution of a dental science. The further acceptance of statistical significance as a safeguard against unwarranted inferences from uncontrolled or incomplete data, the provision of proper laboratory training of our own graduates and the recruitment of established workers from other scientific faculties may well culminate in some startling advances in our basic knowledge of the ætiology and pathology of these diseases. When this stage has been reached—and there are indications that the time is not far distant—clinical application of the experimental findings may place the subject of this symposium within our grasp and palliative treatment be replaced by real prevention based on scientific rather than empirical grounds.

If progress is to be accelerated or even maintained, however, there is one particular pitfall to be avoided, namely, complacency. It is unfortunately true to say that already this insidiously growing attitude has become prominent in certain influential quarters. I have only to mention the general outlook on parodontal disease as one blatant example. It has been said that this syndrome can now be controlled, prevented and cured by hygienic and surgical measures alone, but the authors of these dangerous and false statements have been careful to avoid providing any scientific data to show the statistical significance of their widely disseminated claims. It is true that parodontal disease may be temporarily arrested or retarded by such means, but I have yet to find the slightest evidence of its prevention or cure in the proper sense of the terms. The continued deposition of calculus on the teeth, about which we know little or nothing, is in itself sufficient to prove the fallacy of opinions of this kind since these deposits alone account for up to 80 per cent or more of parodontal lesions in children as well as adults (King, 1940, 1945*a* ; King and Martin, 1951).

It is my intention to discuss briefly a few of the fundamental laboratory investigations now in progress with a view to conveying an idea of their scope and potential implications. The worries and exigencies of present dental practice leave little time for intensive reading of the literature, but rather than attempt a wide research survey which at best could only be an inconclusive summary, I thought it would be of greater interest to say something about a number of long-term investigations the ramifications of which may have an important bearing not only on parodontal disease as we now know it, but also upon the ætiology of cavities in the cervical and radicular regions of the teeth themselves. These studies—clinical, histological, biochemical and bacteriological—are being made in the Medical Research Council's Dental Research Unit at King's College Hospital and, as will be observed, particular emphasis is laid on the experimental approach to the various problems involved.

Ferrets

Following a continuous series of clinical and animal investigations of dental and allied lesions begun in 1932, my attention was eventually attracted to a form of parodontal disease in ferrets which, in clinical and histological features, closely simulated that associated with calculus and food impaction in man (King, 1944). The ferret disease has been fully described else-

where (King, 1945*b*; King and Glover, 1945) and it is sufficient here to state that the lesions were due to injury of the gum by salivary calculus. Prevention and cure, in the true sense of these terms, were effected by including in the diet short lengths of bone with small amounts of muscle, tendon and periosteum left *in situ*. These attachments fed separately had no prophylactic or curative value but merely provided the inducement to bone-gnawing. The tartar-preventing action of bone-gnawing was largely due to the mechanical friction of the hard dietary bone against the tooth surfaces, and its curative effect on established gum disease to removal of calculus, necrotic gingivæ and other debris by similar frictional action.[1] Nutritional reinforcement of the diet of these animals played no dominant role in the development and progress of the disease, but there was evidence that the lesions were retarded by nicotinamide and food yeast (*Torula utilis*) in some instances.

Coincident with the progress of calculus towards and beyond the amelo-cemental junction, cavities were often found in the cementum and dentine of the tooth root. More recently these have been the subject of further study. Two types of root cavities have now been recognised in ferrets suffering from parodontal disease. The first is related to proliferation of the subgingival epithelium along the root, followed closely by new deposits of salivary calculus. Resultant cavities, which may be relatively shallow or extend almost to the pulp chamber, contain degenerate epithelial and connective tissue elements and/or filamentous and other gram-positive and negative micro-organisms associated with invading calculus; primary enamel cavitation has never been encountered. The second type of cavity arises at a much later stage, affects only the apical third of the root and appears to comprise an "inflammatory" resorption of cementum and dentine in which activity of leucocytes and multinucleate giant-cells is a prominent feature. Root cavities of the latter kind would appear to follow destruction of the supporting alveolar bone and resultant loosening of the teeth.

Hamsters

The story is now taken a step further with the introduction of the golden hamster as an experimental animal, following the reported production of dental caries in this rodent (Arnold, 1942; Keyes, 1944; Dale, Lazansky and Keyes, 1944). Our first experiments, begun in 1945, were mainly concerned with the effects of *high-cereal* diets (King and Gimson, 1948–49; King, 1949). It was shown that hamsters given, respectively, wholemeal flour, wheatmeal bread, and coarse or finely milled white maize as their main dietary ingredient develop a form of parodontal disease associated with calculus deposition and food impaction, the sequelæ of which may lead to primary cavitation of the cementum and dentine of the molar tooth roots. As in the case of both the ferret and man, the parodontal lesions were intimately related to proximity of the salivary duct orifices. Indeed, the golden hamster presents a classical demonstration of such a relationship—calculus deposition and parodontal disease begin and are later most severe in the posterior labial regions of the maxilla and the anterior lingual regions of the mandible, and these same parts of the denture are those nearest to the duct openings. The course and detailed histology of this hamster syndrome have been described in our previous publications and the findings shed new light on parodontal pathology in general. Perhaps one of the more significant observations was that showing how food debris and other foreign bodies may contribute to the onset and progress of so-called pyorrhœa not only by direct gingival impaction, but also by themselves forming foci for further pathological calcification. It is also of interest that the lesions in hamsters correspond closely to those around the human upper molar teeth, while the disease in ferrets bears a greater resemblance to that in the human incisor areas. In other words, the form, occlusion and function of the teeth appear to be other determining factors in the progress of the disease, the secodont ferret carnassial and human lower incisors being associated with primary lesions of the gingival crest and gingival epithelium, while in the bunodont hamster molar and human upper molar regions the crest and subgingival epithelium are first affected.

But it is the occurrence of *cavities* in the molar teeth of hamsters which arouses the greatest interest. In addition to those already cited, Orland (1946), Sognnaes (1948), Hurst, Fisbie, Nuckolls and Marshall (1948), Granados, Glavind and Dam (1948), Shafer (1949), Mitchell and Shafer (1949) and others have reported the consistent occurrence of a high incidence of true dental caries in animals given rations containing large amounts of various sugars or cereals. In our experience, however, which now includes dissecting microscope and

[1] An attempt was later made to adapt these findings to the treatment of human parodontal disease (King, 1947*a*, 1947*b*). In this case sugar cane was employed as the frictional agent but, while cane friction proved superior to wood-points, economic and anatomical factors mitigated against its efficacy in everyday practice.

X-ray examination of some 600 animals and *serial* microscopic preparations of more than 450 representative teeth, the hamster lesions differ in many respects from those generally described as dental caries in man. Their histological appearance, as well as the relationship between site of cavitation and proximity of salivary duct orifices, suggested that some at least of the "caries plaques" of the American workers might in fact be accumulations of calculus-like material, and this suggestion has since received support from a number of different observations. First, many of the hamster lesions are associated with reactions of the gum, and later the periodontal membrane and bone, which are identical with those aroused by calculus and impacted food debris—namely, epithelial hyperplasia, pocket formation, corium infiltration, epithelial proliferation along the cementum, bone resorption, and drifting and loosening of the teeth. Secondly, if the animals' molar teeth are scraped with an excavator or probe, material may be obtained which is as strongly alizarin red S-positive as ferret or human calculus. Thirdly, the American workers have reported a high incidence of enamel (fissure) "caries," but in our experience the tooth crowns have shown much less *initial* involvement than the roots. For example, from a group of 186 hamsters receiving 65 per cent of their diet in the form of cane sugar (sucrose)[1] over a period of seven months, a random selection of material including 336 teeth was made for serial sections. The microscopic preparations demonstrated that 53·6 per cent of these teeth had cavities arising in the cementum of the root, but only 0·29 per cent appeared to originate in the coronal enamel. The one molar tooth comprising the whole of the evidence for enamel fissure "caries" presented a lateral extension of the disease at the amelo-dentinal junction but minimal penetration of the dentine proper, although in the same tooth extensive cavities were to be seen in the cementum and dentine of the root. The experimental period was greater than, and the sugar content of the rations as high as, those cited in the American reports, so that every opportunity was given for the development of "caries." It is true that enamel lesions may have existed in parts of the tissue lost during section preparation but the utter absence of significant dentine involvement, other than that following root cavitation, strongly suggests that any primary coronal caries was of very slight degree. Moreover, the root cavities themselves presented a very different picture. Radiographs of the same group of 186 hamsters on high-sugar diets revealed definite lesions in 57 (30·6 per cent) animals and 100 (4·5 per cent) teeth, and histological preparations clearly demonstrated associated parodontal disturbances leading to proliferation of the subgingival epithelium along the root and consequent destruction of the main nutrient source of the cementum. In their earlier phases such lesions bear a marked resemblance to those of parodontal disease in hamsters fed on various cereals (King, 1949). The more sheltered parts of the enamel cuticle (Nasmyth's membrane) are first covered by calculus-like material in those areas of the denture nearest to the salivary duct orifices and these accretions, on reaching the gum margin, cause progressive splitting of the epithelial attachment with resultant pocket formation. Unlike the ferret, the subgingival epithelium is more rapidly affected and reacts by keratinisation of the freshly exposed epithelial remnant adherent to the enamel on the one side, and by hyperplasia and later keratinisation of the epithelial cells externally. The outward building up of the deposits on the enamel and subsequently the cementum, their encouragement by continued keratinisation and other degenerative processes in the contiguous gum and periodontal membrane, the relatively rapid rate at which they progress in wedge-formation towards and beyond the amelo-cemental junction, and their microscopic appearance in histological preparations or in dried specimens *in situ*, all point to their calculus-like nature. Finally, in recent months chemical observations have provided what seems to be indisputable evidence that some of these deposits are similar to typical dental calculus in the ferret and in man.

Mr. S. L. Rowles, B.A., biochemist to the Unit, has reported the following analyses of calculus-like material collected from the molar teeth of six hamsters following autoclaving of their jaws for fifteen minutes :

Weight of dried material obtained ..	10·7 mg.
Material insoluble in N hydrochloric acid at room temperature	32·7 per cent
Acid-soluble calcium found	20·3 per cent
Acid-soluble phosphorus found ..	9·8 per cent
Ca : P ratio	2·07
Do. calculated for $Ca_3(PO_4)_2$ ..	1·935

Calculated as calcium phosphate the calcium content is 52·4 per cent, a figure which may be compared with the value obtained by Glock and Murray (1938) of 75·97 per cent $Ca_3(PO_4)_2$ for human salivary calculus. These figures indicate a considerable degree of calcification of the material examined. Further details will be reported in due course.

[1] *See* King (1950) for a report on some of these hamsters.

In many of our hamsters, therefore, the feeding of high cereal or sucrose diets has been primarily characterised by susceptibility to calculus deposition. Up to the present time few if any animals have been free from these accretions beyond the age of three months but, as in man, their extent has shown individual and regional variations. Some 30 per cent or more of hamsters have also exhibited relatively extensive cavitation of the cementum and dentine after six months and it is now of interest to consider how, in this species, such apparently antagonistic phenomena may be related.

When the advancing calculus approaches the tooth root, the subgingival epithelium has already proliferated for some distance along the cementum and the more peripheral epithelial cells now show clear signs of degeneration. These epithelial changes include swelling of the cytoplasm and later disintegration of the cell wall; swelling and then collapse and shrinkage of the nucleus, causing perinuclear vacuoles and temporarily intensified basic staining (pyknosis); crenation and obvious nuclear fragmentation (karyorrhexis); and loss of nucleoprotein (karyolysis). Underlying the epithelial proliferation along the root, and especially where cell degeneration is most prominent (usually near the amelo-cemental junction), the cementum becomes abnormally thin. Degenerate, flattened or crescentic epithelial and other cell remnants may be found embedded in this "thinned" cementum but they are sparsely distributed and superficial and there is no clear evidence of their promoting lacunar resorption such as that associated with "osteoclasts." It may be that the process is one of cementum lysis effected in some way by enzymes released in the destruction of Sharpey's fibres and other connective tissue elements due to the epithelial proliferation, as well as other lytic agencies resulting from the subsequent epithelial degeneration. It is even conceivable that the initial stimulant to the whole syndrome—irritation of the gum by calculus—may result in the release of a proteolytic enzyme similar to that found in the more remote epidermal cells after low-grade thermal burns (*vide* Leach, Peters and Rossiter, 1943; Peters, 1945). On this point we have as yet no reliable information but the consistent occurrence of cementum-thinning in the wake of epithelial proliferation observed in our calculus-affected hamsters suggests that this phenomenon is of some pathological significance. Here it is again stressed that the most frequent site of cavitation is the tooth-neck and in this region the dentine is covered by a minimal amount of cementum which, as we have just seen, is still further reduced following epithelial proliferation. It is tentatively suggested that the above changes may comprise a preliminary "softening up" of the tooth-root, in the sense of superficial resorption of the cementum associated with loss of its periodontal nutriment and substitution of connective and other tissues by the pathological epithelial invasion. All of these events may well take place in an environment not unfavourable to calculus formation, to growth of proteolytic micro-organisms and to activity of enzymes derived from bacterial or other sources. When cavitation is about to commence, massing of calculus is to be seen along the surface of the cervical cementum previously occupied by invading and now degenerate epithelium. Under favourable conditions—and their precise specification is not yet possible—a saucer-shaped erosion of the underlying cementum, and later the dentine, may next occur, the cavities being invariably filled with an extension of the calculus deposits and their included micro-organisms. Indeed, histological preparations give the impression that calculus is invading or feeding on the tooth substance and here at least three possible mechanisms may be involved—(*a*) the deeper micro-organisms are actively proteolytic, or (*b*) a "recrystallisation" of calcium and phosphate ions occurs as a result of which calculus is laid down at the expense of the tooth substance (cf. Neuman and Mulryan, 1950), or (*c*) some combination of the two processes takes place. However this may be, the resultant cemental and dentinal lesions initially take the form of saucer or wedge-shaped excavations filled at all times with material microscopically indistinguishable (in decalcified preparations) from calculus, while extension of these cavities through the dentine differs from that generally described in caries in that deep penetration of individual or groups of dentinal tubes and liquefaction foci are encountered only after the pulp chamber has been reached or when secondary fractures allow free access of the exposed dentine and enamel to the mouth.

Experimental Findings in Relation to Human Disease

The investigations in ferrets and hamsters are still in progress and the observations and tentative inferences discussed above must be qualified by the possibility that future findings may necessitate their alteration or modification. Nevertheless, at meetings such as this it is perhaps permissible, and certainly more provocative, to compare the animal with human material. As far as lesions of the parodontal tissues proper are concerned, there seems little

doubt that in the ferret, the hamster and man susceptibility and tissue response to salivary calculus follow parallel courses modified only by morphological and functional factors. The clinical and histological pictures and the incidence and extent of disease in each species underline in no uncertain manner the urgent need of discovering the mechanism and means of preventing calculus deposition. The fact that we have found two types of laboratory animals whose reactions are comparable to those of man is an important step towards our goal, and in this respect the main obstacle is now the development of suitable experimental techniques for studying calculus formation *in vivo* and *in vitro*.

Cavitation of the teeth resulting from parodontal disease due to calculus, and particularly its possible relationship to dental caries, presents a still more intriguing but less well-defined problem. It is known that so-called resorption of the permanent teeth may arise from a variety of traumata including pressure from unerupted or displaced neighbours, from defective occlusion, from prosthetic or orthodontic appliances, and even from abnormal proliferation of the parodontal structures. It is less generally realised that root resorption has also been induced in dogs by experimentally made parodontal pockets (Skillen and Lundquist, 1937) and by diathermy applied to the adjacent interdental gum (Gottlieb and Orban, 1930), although the authors themselves were not specially concerned with such operational sequelæ. During the past year I have applied these procedures to the ferret with some results which promise useful information when the studies are complete.

Fortunately the potential danger of traumatic root resorption to the teeth and their suspensory apparatus is often nullified by proliferation of fibrous elements from the periodontal membrane ; the dental cavities may become filled with connective tissue and new deposits of cementum on their walls contribute still further to the " healing " process. All of these defensive reactions are of course accentuated by, and dependent on, relief from the causative trauma. But when root cavitation is associated with, if not initiated by, calculus deposition, as in ferrets and hamsters, protective occlusion of the cavities by new tissue is necessarily minimised and eventually neutralised by continued proliferation of epithelium and calculus along the root. Indeed, as we have seen, the cavities may reach the tooth pulp and, in hamsters, have been found to cause secondary infection and fractures leading to gross coronal involvement simulating caries. It is then of some practical interest that I have recently observed cavities in the cervical and deeper regions of the human tooth following calculus deposition. Clinically, they differ from typical carious lesions in that they are often saucer-shaped, the extent of surface involvement is considerably greater than the cavity depth, and their presence may be obscured and their interior be filled by calculus-like material histologically similar to that already described in hamsters. It is the bacterial population of this human and animal material and its comparison with that of the so-called caries plaque which may provide the most significant contribution in future research on pathological tooth disintegration, and this aspect of the problem well merits brief consideration here.

Frisbie (1950) has recently stressed the occurrence of true dental caries in hamsters and has suggested that both the animal and human lesions are primarily due to proteolysis rather than acid decalcification. In January of this year Professor Frisbie examined some of our animal material and ventured the opinion that what I called " calculus-like " material in *hamsters* was similar to if not identical with the " caries-plaque " reported by the Californian and other American workers. But our differences may be more apparent than real. For example, it is possible that caries plaques and forming calculus may be associated with micro-flora initially common to both, but that in one instance those with proteolytic activity come to predominate and in the other conditions favourable to calcareous accretions gain the ascendancy. It is even conceivable that the two apparently antagonistic processes may occur simultaneously in neighbouring regions. With these and other possibilities in mind, bacteriological investigations are now being made in this Unit by Mrs. R. C. Bruce, M.A., under the guidance of Dr. A. C. Cunliffe, Reader in Bacteriology in the University of London and Bacteriologist to King's College Hospital. In this work full advantage is again being taken of the dental lesions and deposits already found in ferrets and hamsters under strict experimental control. At a later date the animal material will be compared with dental caries and calculus in the less easily controlled human species, while the cultural and smear findings in all cases are being studied biochemically and histologically by Mr. Rowles and the writer. It is too early to describe the current results in any detail but it is of interest that the micro-organisms most readily isolated from *ferret calculus* include aerobic actinomycetes, gram-positive cocci of varying size, short gram-negative bacilli, and diphtheroids ; some of these show proteolytic activity towards

milk, gelatine and coagulated serum. Lactobacilli and Leptotrichia have not been isolated from the ferret material so far examined by Mrs. Bruce. The absence of the latter bacterial species, or at least its failure to grow in an atmosphere favourable to cultivation on blood-digest agar, is not in accord with the earlier findings of Bulleid (1924, 1925) and others using human calculus and blood-saliva agar.

Prophylaxis—Propaganda and Practice

At the present time adequate nutrition and oral hygiene comprise our only means of checking the ravages of dental caries and parodontal disease. The first is largely dependent on the national diet and the second on the very limited extent to which the scaler, the toothbrush and other cleansing gadgets can dislodge calculus and food debris from the crevices in and about the teeth. The relative inefficacy of these weapons is clearly demonstrated by the appallingly high incidence of caries and so-called pyorrhœa in the people of our times. It is true that the filling of carious teeth considerably prolongs their functional life and there is some hope that fluorinated water may play a part in raising resistance to decay. Dental scaling, too, may minimise the ill-effects of calculus on the parodontal tissues although, as I have shown experimentally, the more often the teeth are scaled the faster do the accretions recur. Despite their shortcomings, however, we are justified in claiming that nutrition and hygiene should form the keystones of our public health propaganda. Indeed, our ætiological ignorance allows us no other choice. We do not yet know how caries begins but, if it is due to micro-organisms, as seems most probable, well-calcified teeth and efficient cleansing procedures are reasonable prophylactic objectives. It is immaterial if we believe that caries is a process of acid decalcification or proteolysis or a combination of both, and public bickering between the proponents of each hypothesis leads only to further chaos. Similar remarks are applicable to calculus formation and parodontal disease. The various issues can be settled only by more intensive research in which the development of new laboratory techniques must play a prominent and essential part. In the latter respect the use of powdered human teeth for the study of oral and extra-oral bacteria (Evans and Prophet, 1950*a*, *b*) and that of whole unerupted hamster teeth for similar experiments (Hurst *et al.*, 1948) provide the first of these.

Finally, to the older arts of histology and bacteriology are now grafted the more exact disciplines of applied physics, biochemistry and microbiology, while the electron and phase contrast microscopes and radio-active tracers furnish us with new experimental tools. As in most fields of modern research the days of the lone or part-time investigator would seem to be numbered, team-work and close co-operation between the various sciences now being the order of the day. The writer is largely in favour of such changes. In this Unit the nucleus of a research team is already taking shape and we are fortunate in having the co-operation of colleagues in other more specialised laboratories. The financial limitations so common in medical research still delay the recruitment of established scientific workers to teams of this kind. No doubt this state of affairs will be remedied in due course, although the vocational incentive so necessary to scientific progress must never be submerged. I have as much reason as any other whole-time research worker for wishing to see the salary scales of our specialty raised to the level of specialists of equivalent status in the universities and health services, but the maintenance of scientific integrity must not be jeopardised by the entry of those seeking only fame and fortune—and this might well occur if the opinions of some authorities, well versed in administrative duties though ignorant of the meaning of research, are yet allowed to prevail.

References

ARNOLD, F. A. (1942) *U.S. Publ. Hlth. Rep.*, **57**, 1599.
BULLEID, A. (1924) *Guy's Hosp. Rep.*, **74**, 444.
—— (1925) *Brit. dent. J.*, **46**, 289.
DALE, P. P., LAZANSKY, J. P., and KEYES, P. H. (1944) *J. dent. Res.*, **23**, 427.
EVANS, D. G., and PROPHET, A. S. (1950*a*) *Lancet*, **1**, 290.
——, —— (1950*b*) *J. Gen. Microbiol.*, **4**, 360.
FRISBIE, H. E. (1950) *Internat. dent. J.*, **1**, 13.
GOTTLIEB, B., and ORBAN, B. (1930) *Z. Stomatol.*, **28**, 1208.
GRANADOS, H., GLAVIND, J., and DAM, H. (1948) *Acta path. microbiol., scand.*, **25**, 453.
GLOCK, G. E., and MURRAY, M. M. (1938) *J. dent. Res.*, **17**, 257.
HURST, V., FRISBIE, H. E., NUCKOLLS, J., and MARSHALL, M. S. (1948) *Science*, **107**, 42.
KEYES, P. H. (1944) *J. dent. Res.*, **23**, 439.
KING, J. D. (1940) Med. Res. Coun. Sp. Rep. Ser. No. 241.
—— (1944) *Brit. dent. J.*, **77**, 213, 245.
—— (1945*a*) *Dent. Rec.*, **65**, 9, 32, 55.
—— (1945*b*) *Nature, Lond.*, **156**, 572.
—— (1947*a*) *Brit. dent. J.*, **82**, 61.
—— (1947*b*) *Brit. med. J.*, **2**, 987.
—— (1949) *J. Path. and Bact.*, **61**, 413.
—— (1950) *Brit. med. J.*, **1**, 876.
——, and GIMSON, A. P. (1948–49) *Brit. J. Nutr.*, **2**, 111.
——, and GLOVER, R. E. (1945) *J. Path. and Bact.*, **57**, 353.
——, and MARTIN, W. J. (1951) *Brit. dent. J.*, **90**, 35, 63.
LEACH, E. H., PETERS, R. A., and ROSSITER, R. J. (1943) *Quart. J. Exp. Physiol.*, **32**, 67.
MITCHELL, D. F., and SHAFER, W. G. (1949) *J. dent. Res.*, **28**, 424.
NEUMAN, W. F., and MULRYAN, B. J. (1950) *J. biol. Chem.*, **185**, 705.
ORLAND, F. J. (1946) *J. dent. Res.*, **25**, 455.
PETERS, R. A. (1945) *Brit. med. Bull.*, **3**, 81.
SHAFER, W. G. (1949) *Science*, **110**, 143.
SKILLEN, W. G., and LUNDQUIST, G. R. (1937) *J. Amer. dent. Ass.*, **24**, 175.
SOGNNAES, R. F. (1948) *J. Amer. Dent. Ass.*, **37**, 676.

CLINICAL INVESTIGATIONS IN PREVENTIVE DENTISTRY

By JOHN MILLER, B.D.S.Manch.

A report (Miller, 1950) has been made recently on the first years of the clinical investigations that are in progress at the Turner Dental School. The Preventive Dentistry Clinic was set up in Manchester University in 1947 to study the problems of dental disease in school children and to compare the effect of certain measures advocated for the prevention of dental decay in children. The clinic undertook the full dental treatment for all children in three schools near to the Dental Hospital. At the schools there was a yearly intake of between 100–200 children and at any one time there were approximately 1,100 children between the ages of 3 and 15 years. It was intended that not only should the effect of preventive treatments for decay be observed but also that conservative measures would be applied where the preventive measures failed. By recording the time required to apply both preventive and conservative measures it would be possible to assess the practical value of such preventive treatments.

Two inspections of all the children were made, the first being at the schools without prior treatment and the second being made in the Hospital after full oral prophylaxis by hygienists. From these inspections a picture of the incidence of dental decay and of parodontal conditions was obtained from which there appeared to be a higher incidence of decay in these children than in other parts of the country but this may be due to the different methods of diagnosis employed. In the permanent teeth the most often decayed were the molars, both the first and second molars showing signs of decay soon after eruption. The majority of the carious lesions were situated in the pits and fissures with very few proximal lesions. These findings which confirm general clinical observations are summarised in Graphs 1, 2 and 3.

Graph 1 shows the general level of decay according to age as assessed by the D.M.F. index.

Graph 2 shows the relative incidence of decay in each type of permanent tooth.

Graph 3 shows the relative amounts of pit and fissure lesions compared to proximal lesions.

From these findings it appears that the main problem in these children is the prevention of pit and fissure lesions in the permanent teeth.

It was decided to investigate four lines of preventive treatment. These were:

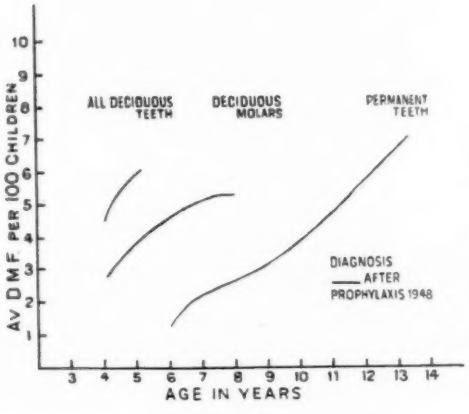
(1) Full mouth oral hygiene carried out by dental hygienists.

(2) The application of ammoniacal silver nitrate to all posterior permanent teeth. The silver nitrate was reduced with eugenol after being in contact with the teeth for one minute.

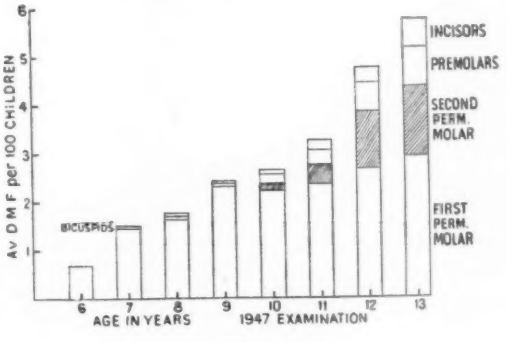
(3) Application of 1 per cent sodium fluoride in aqueous solution to all teeth for two minutes.

(4) The occlusion of all pits and fissures of posterior permanent teeth with black copper cement.

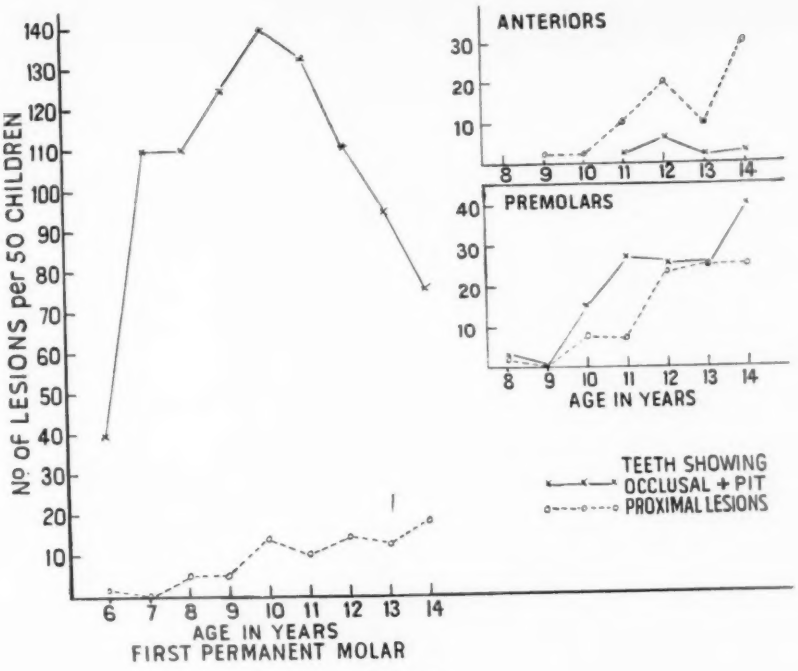
The last three treatments, i.e. the application of silver nitrate, sodium fluoride, and black copper cement, were applied to dried teeth after



Graph 1.



Graph 2.



GRAPH 3.

oral hygiene had been carried out. One or other of these treatments were applied once every six months to similar groups of children.

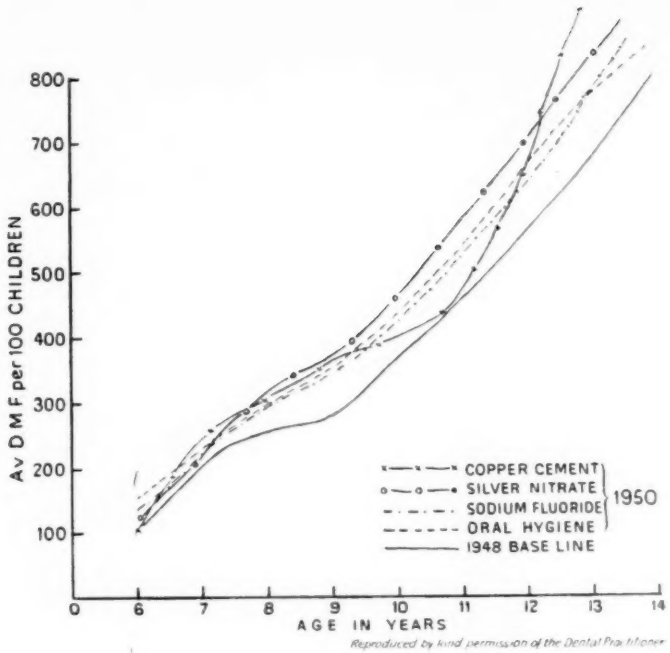
The preventive treatments were commenced in 1948 so that by 1950 the children had received in all four applications. Many children did not receive the regular or full number of treatments and had to be excluded from the assessment. Nevertheless over one-half of the original number of "starters" finished the course.

The control of the effect of preventive treatments was made by comparing the dental conditions of children after treatment in 1950 with the dental condition of children before treatment in 1948. This is sometimes referred to as the "base-line" or "yardstick" method of control.

Using the "yardstick" method of control no reduction of caries has been shown from two years' treatment by any of the above four methods (Graph 4). In fact, in all groups there appears to have been a slight increase in the incidence of decay. The general increase may be attributed in part to the fact that during successive examinations reference was made to previous clinical records. Nevertheless, it would appear that no practical reduction of caries has resulted from any of these measures, nor do they exhibit any superiority over treatment by oral prophylaxis alone.

It must be acknowledged that during the first eighteen months the copper cement treatment was not given a fair test in that in this group silver nitrate reduced by eugenol had been applied immediately prior to the copper cement. The presence of oil on the tooth may have acted as a separator and impaired the adhesion of the cement. Recent observations have shown that the cement applied to the clean dry tooth will generally remain in the fissures for six months. It is hoped that by the time this paper is presented the results of the treatments during the third experimental year will be available and that it will be possible to report on the effect of copper cement.

After the recent reports (Knutson, 1949) from America on the effect of the surface application of fluorides, it does at first appear surprising that no reduction in caries incidence was noted in this experiment. The fluoride applications are not so frequent as those advocated by Knutson but a six-monthly application is a necessary



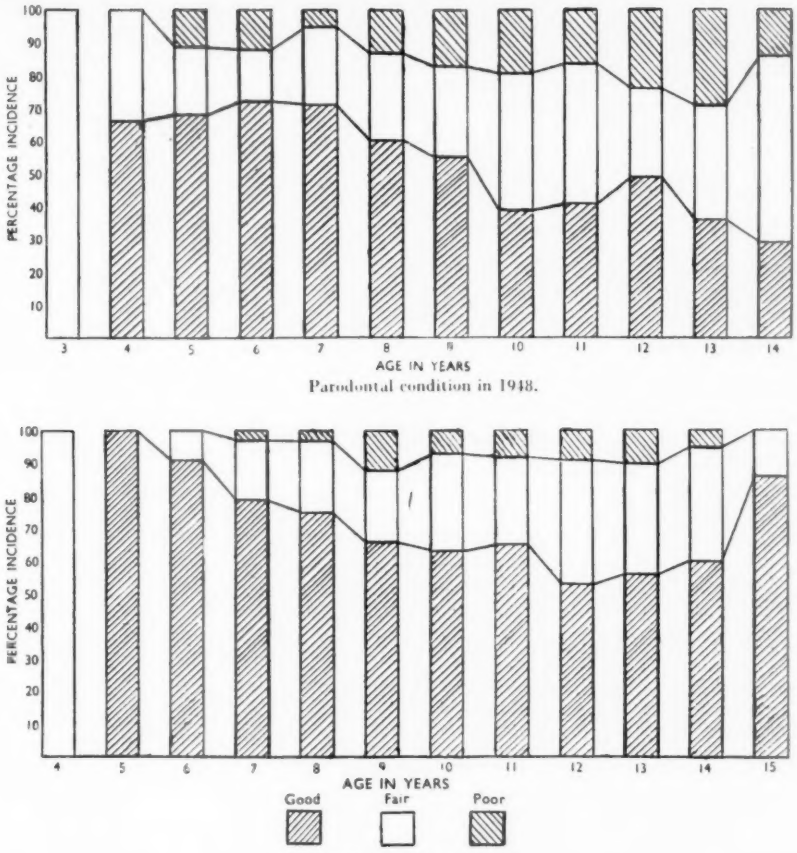
GRAPH 4.

feature of this comparative study. If we recall some of the reports on the incidence of caries in areas where fluorides occur naturally in the domestic water supply it will be remembered that some caries did occur—such caries being mainly of the pit and fissure variety. In this study it has been found that the greater part of decay in young permanent teeth occurs in pits and fissures, and it is therefore not so surprising that no caries reduction has been observed. It has been suggested that fluoride exerts a delaying effect rather than a preventive effect on caries. Thus it may be that fluorides do not prevent the actual initiation of a cavity but may slow down the carious process. As in this investigation once a cavity had been diagnosed as carious, which diagnosis included "sticky fissures," the cavity was filled and therefore it has not been possible to assess whether the rate of growth of a cavity was delayed by the application of the fluoride, etc. Even if the rate of cavity growth is decreased it is of doubtful value, for that cavity will eventually require conservative treatment.

The failure of silver nitrate treatment to reduce caries incidence substantiates the work of Klein (1942) and further emphasizes the doubtful value of such treatment. As there are a variety of methods advocated for the application of silver it would appear that more basic research is necessary before a final decision is taken as to the value of silver for preventive purposes.

There is, however, a more cheerful side to the picture, because as a result of the regular oral hygiene and the oral hygiene instruction given to the children by the hygienists a marked improvement in the parodontal condition has resulted. This is seen in Graph 5 which shows the parodontal condition of all children before and after one year's treatment. As a result of their treatment by hygienists the children become conditioned to dental treatment so that subsequent conservative treatment is a much simpler matter. The introduction of a child to dental treatment by a hygienist tends to eliminate most of the fears of dentistry which children acquire from older people. So that although children do not consider a visit to the clinic as a joyous occasion, though quite a few do, the majority come to regard it with tolerance more than with fear.

Though none of the preventive measures



GRAPH 5.—Showing the percentage incidence of parodontal disease at various age-groups in 1948 and 1949 (after a year's treatment).

(Reproduced by kind permission of *The Dental Practitioner*.)

investigated has shown as yet any great hope for the prevention of caries we feel that with the conditioning of the children future dental treatment can be made easier.

REFERENCES

KLEIN, H., and KNUTSON, J. W. (1942) *J. Amer. dent. Ass.*, **20**, 1420.
KNUTSON, J. W. (1949) *J. Amer. dent. Ass.*, **38**, 204.
MILLER, J. (1950) *Dent. Practit.*, **1**, 3, 7.

DISCUSSION

PROFESSOR M. A. RUSHTON, in opening the discussion, said he thought the work described by Mr. Miller was the kind of clinical research that was needed. He always found statistics very difficult, but wondered whether in the case in question it was appropriate to use the base-line type of control, because there was some reason to believe that in certain parts of the country the caries rate had increased in the last few years and it seemed to him possible that all the treatments which Mr. Miller had given might have done some good, in that without them the condition at the present time might have been considerably worse than it in fact was, although not worse than the base line.

He thought it was important to realise that the method of fluoride solution application which Mr. Miller had used differed very considerably from that type for which important results had been claimed, so the fact that no conspicuous improvement had been shown in the case of Mr. Miller's investigation did not tend to discredit methods such as that advocated, for example, by Knutson. It might be necessary to wait a little longer before deciding whether the good results claimed for

that method had been confirmed, but Mr. Miller's work did not affect that issue.

Professor Boyes had tried to grapple with a very difficult dilemma. Although he and many other people thought that the enamel cuticle had a protective action as far as dental caries was concerned, when caries started it did not start in the places from which the cuticle had been worn away but in the places where the cuticle still remained. Professor Boyes attempted to explain this by saying that the cuticle was " rendered unhealthy " by which he supposed was meant that it had undergone some chemical change by the contact of decaying food debris. One might then ask wherein lay the protective quality of the cuticle, because it was known that a tooth in any case became more liable to caries in the neighbourhood of decaying food, and, if it also occurred where the Nasmyth's membrane existed, where was the protective action of the Nasmyth's membrane?

He thought that the question of the fluorination of the water supplies was one that should not be passed over lightly. There could be no doubt now that a naturally high-fluoride water was an important protection for the public against dental caries. It could not be said with certainty that an artificially high fluoride water gave the same protection, but the evidence, as far as it went, suggested that that might be so. Professor Boyes had dismissed this method of protection rather lightly, saying that the method of seeking prevention by the building up of tooth resistance was a passive method and was largely in the hands of the parents. Personally he felt that it was a matter for the dentist also, because the public had to rely for guidance in this connection on the opinion of dentists, and the latter should keep themselves informed of the position and be prepared to express an opinion.

Dr. King was well known to dentists for the long series of papers that he had published and perhaps no less for his forthright and outspoken opinions. He thought it must seem to many of them that the research worker was rather like a mole, in that they never knew where he was going to come up next. A paper might often appear upon the behaviour of some strange animal or part of an animal which seemed to have no connection with human sufferings or endeavours. He, therefore, thought it was very valuable that they had had the present opportunity of hearing Dr. King describe how the work of the Dental Research Unit of the Medical Research Council was progressing, and how it was that the results of one experiment had led to another experiment and the results of the second experiment had led on to a third, and so on. It was necessary for animal research work in dentistry to be conducted on those lines, but implicit in the method there was the risk that if the results of any one of the experiments were misinterpreted the next experiment might be built on a false basis.

On seeing the slides which Dr. King had shown, he had been impressed by the volume of work done and the detailed observation, but he was not in a position to say whether he agreed with Dr. King or not. He thought that Dr. King was rather inclined to see calculus everywhere, but that was very largely a matter of terminology, and no argument on the question was possible until agreement was reached on the meaning of such terms as " calculus " and " plaque."

He would like to see much more research work done on the subject of the prevention of dental diseases. Taking the country as a whole, with its population of fifty million, but meagre dental research facilities, the volume of this research was small, though its quality might be high. Comparatively few dentists were prepared to devote themselves to the work, and, whilst he agreed with Dr. King that people should not be lured to enter dental research by the hope of wealth and fame, he felt that the balance at the moment was much too severely tipped in the opposite direction.

Mr. J. D. SYKES said that Professor Boyes had said in his paper that if a map were drawn showing the areas in which dental and parodontal lesions occurred it would be found that those areas were the areas of civilisation. It was obvious that absolute prevention of dental disease was not in the hands of the dental profession but in the hands of those who produced and prepared food. The biochemical constituents of that food might be adequate, though there were some, notably the protagonists of the " Living Soil " thesis, who challenged this, but there was no doubt whatever that the physical properties were not what they should be, as all the detergent qualities had been taken away.

He would like to make a plea, first, for less refinement of food, and, secondly, for less refinement of table manners. He would suggest that the proper way to eat a leg of chicken or a mutton chop was to dispense with a knife and fork.

There should be a return to natural food. That would not be easy to achieve, because people had become used to soft foods. The necessity for vigorous mastication was gone. The preparation of food was in the hands of heavily capitalised industries, which mutilated the food. He did not think there was any hope for an immediate change in this connection, and all that could be done at the moment was to adopt measures to reduce the incidence of dental and parodontal lesions.

With regard to the incidence of dental disease, he had recently come across in one of his schools a girl of about 15 of very fine physique. Her dental arches and articulation were perfect, and she had not the slightest trace of caries. She had a brother and sister who were average children; they had caries, mild irregularities and mild gingivitis. Those three children had the same background, the same habits, the same environment and the same heredity. What was the cause of the difference? Was it that the eldest girl by good fortune had normal articulation and perfect arches with natural oral cleanliness due to the shape of her arches ? Was it pure chance, or was there something else at the root of it which was not yet understood ? He knew two other similar families, each with a girl of 14 or 15 with a perfect dentition and with younger members of the family who were merely average in that respect.

With regard to the question of artificial prevention, Mr. Miller had referred to various therapeutic measures that were at present available, none of which produced any startling results. He thought that most dentists were convinced that if oral hygiene was practised thoroughly and conscientiously—and that could be done only by the patient himself—some very good results would be obtained. It must obviously depend on edu-

cation. If dentists could persuade their patients to spend as much time on their teeth as they spent on their hair, it was possible that they might keep one as long as the other. There were relatively few occasions on which practising dentists could undertake this education themselves. However effective measures of oral hygiene might be, there would still be sufficient work of a conservative nature to occupy the full resources of the dental profession for many years to come, and it seemed obvious that the work of instructing the patient must be undertaken by other people. Mr. Miller had referred in his paper to the question of ancillaries, and that question was very closely bound up with the whole subject of the prevention of dental disease.

Mr. P. G. CAPON said that he had had practical experience of Mr. Miller's method, as he had been using it in a limited way in private practice for the last ten years, and he wished to endorse what Mr. Miller had discovered as being an extremely valuable remedy in a dentist's hands to control a situation which could get out of bounds so readily. The type of case in which he had felt that it was reasonable to adopt this method was the type with which all dentists were familiar, the child who presented teeth which had deep fissures and the child whose posterior teeth on eruption were persistently covered with food debris. The difficulty was, as Mr. Miller had pointed out, to seize the right opportunity to practise the method, as one might easily be too late. It had therefore been his custom, in cases of which he had been suspicious, to fill the fissures with black copper cement before full eruption of the permanent molars. It had to be done very carefully indeed. It was very easy to put some cement into the fissures without proper attention to the fissures first. He had had several cases which had disappointed him in that unrecognised early caries was later found to be spreading rather rapidly underneath cement which still remained in the fissures. In spite of that, he felt that such treatment was effective, at least for a considerable period, and, if later on it was decided to clear out the fissures and fill them by ordinary methods, he felt that a very much easier and more satisfactory operation had been made possible.

He wished to thank all three authors, and he would like to thank Mr. Miller in particular for his work, which he thought was of very great value.

Professor A. I. DARLING said that there were one or two matters which he would like to raise which seemed to indicate that the process of caries was even more complex than it had previously been thought to be. Up to date, in thinking of diet in relation to caries, one had thought of its local action or, alternatively, of its general action before the teeth erupted, in the production of good or bad teeth, but recent work which had arisen from the investigations and recording of statistics during the war by Mrs. Mellanby and her co-workers, and by other people in other parts of Europe, seemed to show that, with the decrease in the amount of refined carbohydrates in the diet, there had been a decrease of caries during the war. Since the war there had been an increase again, but the strange factor was that this decrease and subsequent increase had been postponed much longer than might have been expected, the postponement being about two to four years. It was rather difficult to reconcile this with the usual conception of the local effects of food, in that if one increased the intake of refined carbohydrate one would expect, according to some American workers, that in a matter of minutes after entering the mouth the carbohydrate would produce sufficient acid at the contact points and in the fissures to attack the teeth. He thought that all dentists were fairly certain that carious cavities could and did frequently occur in very much less than two to four years.

Another matter which seemed to him to tie up in some way with this and on which he would very much like to hear the authors' comments was the work of Sognnaes. Sognnaes claimed that he had produced caries in golden hamsters and that, furthermore, he had produced caries much more readily in the offspring of golden hamsters which themselves had had a high carbohydrate diet. It was further suggested that the carbohydrate might have had an influence on the structure of the offspring's teeth. One could only conjecture how far this might be true in the case of the development of human caries, but it had been suggested that carbohydrate could increase the susceptibility to caries in the next generation, and, on the other hand, it had been suggested that the increase in caries due to an increase of refined carbohydrate in the diet had been delayed for about two to four years, which was by no means a generation. He would like to hear the comments of the authors on those points and to know how they tried to correlate these facts with their present views on caries.

He had had an opportunity to see some new work, not yet published, on an allied problem. Why was it that some primitive races, negroes and others, living in primitive conditions, were eating considerable amounts of carbohydrate and still having very little caries? The work in question had been done in an attempt to discover whether there was in fact a greater acid attack on the enamel of the teeth by very highly refined flour as compared with wholemeal flour, and the effect of other articles of diet, such as raw cane sugar and molasses as opposed to refined sugar, was also considered. There seemed to be little doubt that, in the case of wholemeal flour—100 per cent extraction flour—there was less acid attack.

Coming to the other side of the picture, he was not at all convinced that what was regarded as a normal well formed tooth in the mouth was not itself naturally susceptible to caries. When negroes or Indians, who normally did not have a great deal of caries, came to civilised countries their teeth were attacked very readily. On the other hand, it was known as a fact that it was extremely difficult, as Dr. King had pointed out, to persuade caries of anything like the normal human type to occur in the vast majority of experimental animals, even when the animals were given a diet very similar to the diet of human beings in this country. It seemed to him, therefore, that the structure of the teeth played a very large part. Possibly the teeth of the animals had a much more satisfactory structure for the prevention of caries than the well formed human tooth had. He thought there was a good deal of scope for work in this connection.

He would like to congratulate Mr. Miller on the results that he had obtained, because he knew only too well the difficulties of clinical investigations of caries and had

suffered to some degree from Mr. Miller's experience of a reduction in the end number.

He would like to ask Mr. Miller how far the reduction in caries which was mentioned in the paper as resulting from the use of copper cement, fluoride or one of the other substances employed, was in fact due to the age change. It was known that the incidence of caries varied at different ages, and he would like to know whether Mr. Miller's 300 patients at the end of the investigation were still evenly distributed in the age groups with which he had started and whether his patients resigned from the experiment evenly from each group or whether he had to put up with what was left. If they had resigned unevenly from the different age groups, had Mr. Miller investigated the possible effect of that variation on the results which he had obtained ?

Mr. C. N. PEACOCK said that no one had mentioned the fact that the prevention of dental disease lay in the hands of women and that the foundations for the prevention of dental disease must be laid in early life. Nearly twenty years ago he had put forward the theory that fluorine had the controlling effect on the formation of the perfect tooth. How could fluorine be introduced into the diet in early life ? He would suggest that health visitors, district nurses and social workers should visit every baby that was born and suggest to the mothers that their children should be given a coarse cereal which contained fluorine near the germ or near the outer layer, cod liver oil, which also contained fluorine, plenty of milk products, especially cheese, to provide calcium and phosphorus, and vegetables and fruit, to provide magnesium. The mothers should be visited every six months o see that the children were fed in-this-way, so that their eeth were strong, that being the best means of preventing dental disease. As soon as it was noticed that anything was wrong with the teeth, the children should be sent to a dentist. If children were fed on the sugary foods which they were given to-day, he knew of no other way of preventing dental disease than by removing four teeth as Wilkinson had suggested, as that allowed a better saliva flow and blood supply to the part and so increased the consolidation of the atomic structure of the teeth.

That was what he meant when he said that the prevention of dental disease was in the hands of women.

REPLIES TO DISCUSSION

Professor J. BOYES, referring to Professor Rushton's remarks, said that he thought the enamel cuticle provided a certain amount of protection, certainly against acid. Professor Darling, to whom he had just spoken on the subject, had expressed the opinion that the enamel cuticle formed a certain protection against the local production of acid at the initial stages.

He had not said much about the fluorinisation of public water supplies, because he had thought that the subject would be dealt with fully in the discussion. He was certainly in favour of it; it seemed to be popular in America, and he was satisfied that there was convincing evidence in support of it.

He had been very interested in Mr. Sykes' remarks. He himself had done school dentistry for a little while, and he had then come across families similar to the one described by Mr. Sykes. One girl had perfect teeth and perfect arches, whilst the younger children in the family had extensive caries, yet they lived together and were fed on the same diet. He did not know what the explanation was.

Dr. J. D. KING, in replying to the discussion, referred to the question of calculus *versus* plaque, which had been mentioned by Professor Rushton, and said he did not know how the two would be defined. Professor Rushton had told him on one occasion that he had tried to remove the deposit on a hamster's teeth and had found that it was soft, whereas he himself had removed a large amount from a large number of animals and had found much of it was calcified on chemical analysis. Whether it should be called calculus or plaque he still did not know.

With regard to Mr. Sykes' remarks, he thought it would be rather difficult to remove debris from the upper molar region and the lower incisor region by gnawing a bone. It was difficult to gnaw anything on the inside of the lower incisors.

With reference to the work of Sognnaes, to which Professor Darling had alluded, he had met Sognnaes during the latter part of the war and was very interested in his later accounts of caries-susceptible stock. He believed that Sognnaes used rats in his experiments.

Professor Darling had referred to the dental condition of negroes and Indians. The negroes and East Indians in the West Indies had a considerable amount of caries, and he thought that school dental officers in this country would be depressed if they saw the teeth of some of the children there.

Mr. J. MILLER, in replying to the discussion, referred to Professor Rushton's remarks with regard to the base line and said that the main idea in the investigation was to see whether practical reductions in caries could be produced. There was a method of checking the accuracy of the base line, as between one hundred and two hundred children entered the scheme in further treatment groups each year. Though not giving a comparable size check on the accuracy of the base line, they gave a fair indication at certain selective ages. The base line appeared to him to be reasonably accurate for the purpose of the type of investigation in question. It was not a delicate control; it was in fact a very coarse control, but the idea was to show treatments which would be of real value in use and not merely of academic interest. Another point about control was that the oral hygiene group acted as a temporary control on the effect of oral hygiene in the other groups, so the effect of the treatments could be definitely assessed as against the oral hygiene group.

With regard to the application of sodium fluoride, a two-minute application was used in order that all the treatments might be similar in the length of surgery time necessary for their application.

As to Professor Darling's questions, the results of the investigation had been completed only a few days ago, but he had checked the question of the balance and he thought the figures were reasonable in each age group.

On the motion of the PRESIDENT, a vote of thanks was accorded, with applause, to Professor Boyes, Dr. King and Mr. Miller.

SOME FACTORS AFFECTING CONVALESCENCE IN ORAL SURGERY

By RONALD WALKER, H.D.D.Edin., L.D.S.Lpool.
Major, Royal Army Dental Corps

In any operation the particular technique favoured matters not at all to the patient so long as he is comfortable during the operation, remains so during convalescence, and the desired result is obtained. Adequate and suitable anæsthesia will ensure comfort during the actual operation, and a modicum of skill on the operator's part will enable the desired result to be attained. The period of convalescence, however, is often far from comfortable.

Many operators must have been troubled with the aftermath of the removal of semi-impacted and impacted teeth and may have concluded that jaws grossly swollen and painful for a week or more after operation are to be looked upon as normal, and that any better result is an act of God.

It was considered that a stormy convalescence should not be the rule, and after a considerable period of clinical observation, a standard operative procedure was evolved which, in the writer's hands, gives adequate results and a short, fairly comfortable, convalescence.

The approach to the removal of an impacted tooth is the same whoever is the operator, and whatever technique is to be used. The problem to be solved is how to create sufficient free space to allow the tooth to be removed in a piece or pieces. The amount of free space demanded varies with the technique, but all obtain some of the required space by the removal of bone from around the tooth.

The principal factors which militate against a comfortable post-operative wound are, in the writer's opinion, the following :

(1) Operating on unsuitable cases.
(2) Excessively long operating time.
(3) Laceration of the periosteum.
(4) Sepsis arising from bone dust and other debris left in and around the wound.
(5) Excessive heat generated during instrumentation.
(6) Expansion of tooth socket causing trauma to nerve endings in the area.

Unsuitable cases are those with an already inflamed bone present at operation. Acute or chronic infection should always be adequately controlled by chemotherapy and local treatment before operation is attempted. There is little or no excuse now for removing an impacted tooth in the presence of an acute infection.

Proper planning should prevent too long an operating time. In a long operation the possibilities of sore throats, chafed lips and a tired and depressed patient are at a maximum. The major clean cases should be taken at the start of the list, finishing off with any short septic cases. Septic cases which may take a long time are better done on a separate occasion rather than towards the end of a long list. A tired operator is apt to turn a long case into a very long one, or worse still into an unsuccessful one.

Laceration of the periosteum is avoidable. It should be cut with sharp knives, raised with a sharp elevator of reasonable size, and adequately retracted. Time spent in doing this is never wasted.

The fourth and fifth factors are both connected with the removal of bone, and much thought was given to the methods which can be employed to do this and all the usual methods were tried out.

Bone can be removed by using burs held in the handpiece of a dental engine, by the use of chisels and gouges in an automatic or engine mallet, by the use of chisels and gouges with a hand mallet, or by a combination of any or all of these methods.

To remove bone with burs is a relatively simple procedure with two great risks attached to it. The first is the scattering of bone dust, and the wound needs very careful irrigation and suction if this is to be removed completely and not act as a favourable nidus for infective processes with accompanying inflammation and pain. The second risk is that of burning the bone. Working in the almost dry field resulting from premedication and adequate suction it is difficult indeed to use burs and not burn the bone. Slow-running burs used for short periods probably avoid this but increase the operating time and make for a tedious operation. With this method it was found that post-operative pain and swelling appeared to be the rule, despite a full aseptic technique. The attendant risks are felt to be too great, and the use of burs is not recommended.

The use of automatic and engine mallets fitted with chisel and gouge ends, whilst an improvement on the previous method, present certain difficulties. The strength of the blow is difficult to judge and requires constant adjustment. Any mechanical apparatus is liable to jam and always seems to do so at an inopportune moment. Sterilisation is difficult, and few

people possess sufficient mallets to cover a series of cases. For these reasons their use was abandoned although the clinical post-operative results were good.

The third method, the use of chisels and gouges with a hand mallet is, in the writer's opinion, the method of choice. The advantages are :

(1) Cold cutting results in no burnt bone.
(2) Practically no bone debris is formed, the pieces being of a size readily removed with dressing forceps.
(3) The bone edge left is of live healthy bone, which should heal rapidly.
(4) The speed with which bone can be removed is the maximum possible with safety.

Post-operatively the patient is usually much more comfortable and convalescence is shorter than with any other method. The cold cutting seems almost to obviate after-pain, the absence of bone dust minimises the risk of sepsis, and the speed of cutting reduces the operating time to a minimum.

When it was found that cold cutting minimised trauma and reduced the operating time, attention was turned to the possibilities of tooth sectioning in order to reduce these still further.

In all save the simpler impactions planned sectioning saves much time because less bone needs to be removed to free the tooth. The necessary free space is obtained by splitting off part of the tooth in such a way that, on removing the piece, the remaining portion of the tooth can be dislocated into the space so obtained. This ensures the minimum expansion of the tooth socket in removing the tooth, with, in consequence, the minimum trauma to the nerve endings in the area.

The cutting of bone by this method, and the sectioning of teeth, are difficult to describe in words, and practical training under a suitable mentor is the best way to acquire a technique. Each case is taken on its merits, a good clinical examination and the taking of the usual X-ray pictures giving the necessary pre-operative information. From this it will be possible to work out roughly what will have to be done, that is, how much bone will require removal and in what axis it will be best to section the tooth.

When bone is being chiselled the initial cuts should always be made at right-angles to the free edge of the bone, so that cuts parallel to the free edge will be limited in extent. This prevents the accidental denuding of a tooth root or the splitting off of a large piece of the ascending ramus. Many operators teach that the jaw must be supported when a mallet is being used. The reasons for this teaching are not known, but it is assumed that it is looked upon as a safeguard against the possibility of fracturing the jaw. In the writer's view it is much safer not to support the jaw when malleting. This results in a certain amount of the force used being lost but this is a safety valve which, in the event of too much force being used, may be the means of averting a fracture, where, with the jaw supported, a fracture would have resulted. To those who would say that lack of support may result in damage to the temporomandibular joint, the writer would say that in no circumstances should the weight of the blow ever be such as could cause damage to the joint whether the jaw is supported or not.

Sectioning of the tooth should be deferred to such time as there is a small amount of movement of the tooth in its socket. To attempt to drive even a very slender osteotome into an immovable tooth may fracture the jaw, whereas with a little movement present, the disrupting force of the blow will not be transmitted in its entirety to the bone. The possibility of a fracture occurring should always be kept in mind.

Instruments

The instruments needed are very much a matter of personal choice. Chisels and gouges of between $\frac{1}{8}$ in. and $\frac{1}{2}$ in. in width and long enough to project from the mouth when the cutting edge rests on the ascending ramus are usual. Good unplated cutting steel which will withstand repeated sharpening and sterilisation is the best material for them. The writer has a decided preference for half-round gouges of varying sizes. These allow semicircular pieces of bone to be cut off the free edge with one blow. There is no danger of a large piece of bone splitting off accidentally, and it is easy to keep the amount removed down to the minimum necessary for removal of the tooth. Gouges are always to be preferred to chisels in attacking the bone of the ascending ramus distal to a lower third molar. The safe application of chisels to this area is difficult, and three cuts are needed to remove a piece of bone, whereas a suitable gouge will remove a similar piece with one cut, and with greater safety.

An all-metal mallet of about 10 ounces in weight has been found suitable, and the feel of this instrument is picked up quickly. It should be used with a loose tapping action and never used to drive the chisel or gouge into the bone.

SUMMARY

A technique is described for the removal of impacted and semi-impacted teeth, resulting in a short and comfortable convalescence.

BIBLIOGRAPHY

COGSWELL, W. (1932) Dental Oral Surgery. Outwest Print. Coy.
FELDMAN, M. H. (1941) Exodontia. Lea and Febiger.
FIELD, H. J., and ACKERMAN, A. A. (1938) *J. Amer. dent. Ass.*, **25**, 1053.
HAMAN, G. L. (1948) *J. oral Surg.*, **6**, 157.
KELLS, C. E. (1923) *Dent. Cosmos*, **63**, 101.
PELL, G. J. (1938) *J. Amer. dent. Ass.*, **25**, 1594.
—— (1941) *J. Miss. dent. Ass.*, **21**, 227.
——, and GREGORY, G. T. (1942) *Amer. J. Orthodont. Oral Surg.*, **28**, 660.
THOMA, K. H. (1932) *J. dent. Res.*, **12**, 175.

Practical Notes

METHOD OF SPLINTING LOOSE INCISORS

BY R. G. WOODWARD, *M.C.*, L.D.S.ENG.

THE accompanying radiograph illustrates a new method of carrying out one of the oldest operations in dentistry.

The patient, a man of 63, had developed parodontal disease in the upper incisors as a result of traumatic occlusion, the lower incisors closing in front of the uppers with considerable overlap. $\underline{1}|$ had become very loose and was a source of much anxiety to the patient, a very highly strung man who dreaded the thought of losing it. His teeth and gums in general were in very good condition.

In addition to appropriate gum treatment it was obviously essential to support $\underline{1}|$ and that speedily. An objection to using interlocking inlays was that, owing to the heavy backward thrust on the upper incisors due to the peculiar bite, such inlays would have to be placed on the labial surfaces of the teeth in order to obtain adequate

retention. This would be æsthetically very bad. $\underline{2}|$ and $|\underline{1}$ were both surprisingly firm. It was therefore decided to cut dovetailed cavities in adjacent surfaces of $\underline{21}|\underline{1}$ and to fill them with Dentafil (a self-curing acrylic filling material which I have found very satisfactory in suitable cases) in which would be embedded short lengths of irido-platinum wire connecting the cavities.

This was done six months ago and has given a satisfactory result in every way so far. Later $\underline{2}|$ and $\underline{3}|$ may be united in the same way for greater strength. The cavities were prepared from the labial aspect and do not extend to the lingual surface. Adjacent cavities were filled simultaneously. The irido-platinum wire was roughened before use. There is a distortion of the radiograph in $\underline{2}|$ region which makes it appear that the wire joining $\underline{2}|$ to $\underline{1}|$ is thicker and less well fitting than the other.

TREATMENT OF THE MODERATE GUM POCKET

BY K. MCALLISTER, L.D.S.LPOOL.

THERE are many cases of chronic gingivitis with interstitial pockets averaging 3 or 4 mm. in depth, where, after scaling, œdematous papillæ do not shrink sufficiently to give the patient a chance of keeping the gingival crevices clean for any length of time.

The purpose of this note is to suggest, as a method of pocket elimination, the combination of electro-coagulation and firm packing with the zinc oxide-wool-eugenol mixture after the manner described by Dr. E. Wilfred Fish.

The Farrell Webb machine is used at a low current intensity, and gum tags are coagulated buccally and lingually with special attention to loose papillæ and their bases. The dressing is then applied, being packed firmly between the teeth. Coagulation can be carried out largely without local anæsthesia : there is no bleeding and very little after-discomfort. Extensive areas, even the whole mouth if desired, can be treated during one visit.

The pack is removed after a week, and as the margins at this stage are tender, paraffin wax may be used as a secondary dressing. It is clean, unobtrusive, and can be applied quickly.

Orban designed a special syringe for the purpose. This cannot now be obtained but any metal syringe with a metal plunger will do. An ordinary long needle mount, hollowed out with a bur, flattened and curved, is attached. Wax which has previously been moulded into cylinders of suitable length and diameter to fit the barrel of the syringe is inserted into it. The syringe is warmed sufficiently to render the wax pliable without melting it. The wax is then expressed from the syringe as a thin ribbon through the interdental spaces. A finger is held lingually to cause a blob of wax to form which locks the dressing into place. The wax is applied continuously from space to space and sticks quite well for a few days after which scaling, now simplified, can be carried out and light friction be started.

BRITISH DENTAL JOURNAL

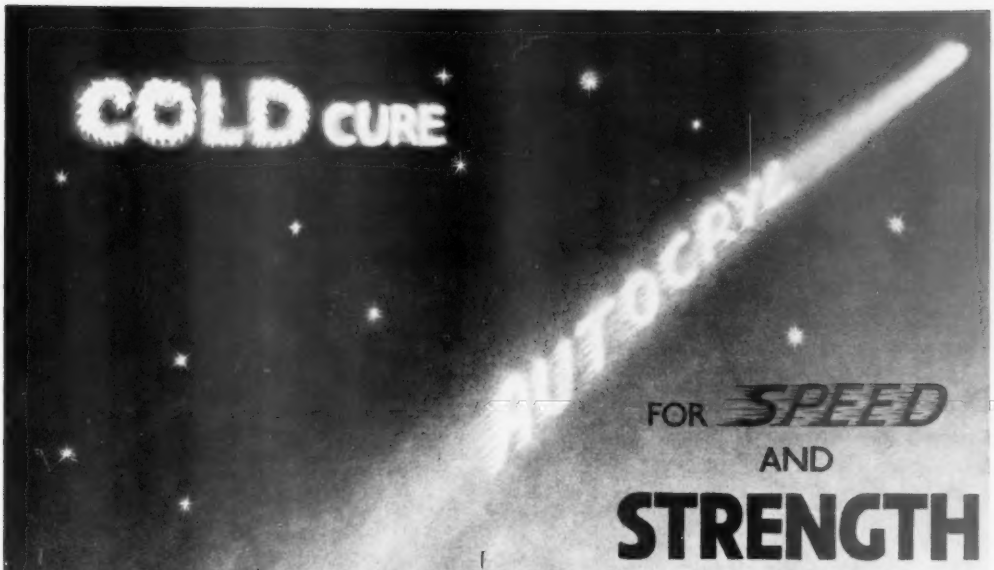
AUGUST 21, 1951

PREVENTION

AMID all the preoccupations of the British Dental Association with the problems of dental politics—internal and external—on the one hand and those of its members in the day to day practice of their profession on the other, the theme of the prevention of dental disease has run like a golden thread through the proceedings of the Association during the seventy-one years of its history. The volumes of the Journal bear eloquent witness to the devoted, and often but scantily rewarded, work of pioneers in this field—men who have been inspired by the desire to increase the sum of human knowledge and to make that knowledge available to their colleagues, with a view to lessening the incidence of dental disease.

The sceptics may, perhaps, be pardoned if they wonder how much has actually been accomplished in this field in the last two generations, and the faint-hearted if they, for their part, despair of it ever being possible to persuade modern man to adopt the measures necessary to avert this plague of civilisation or to abandon the comfortable belief that it is possible to eat the cake of " civilised " diet and, at the same time, to have that of an undiseased dentition. There are, as the President pointed out in his Inaugural Address, two separate sets of problems, scientific and social, to be solved before it will be possible to bring about any radical reduction in the incidence of dental disease in the population as a whole. The scientists—and this term covers workers in a wide range of subjects other than dental science —have still to unravel the twisted skein of the causes of dental caries. Until this has been done complete prevention cannot be attained, and the most that can be hoped for is some lessening of its incidence. As, however, the threads are slowly unwound, each addition to our knowledge brings us one stage nearer to the final goal, and it is impossible to believe that the resources of science and the correlated work of research workers, " chemists and physicists, anatomists and statisticians, physiologists and bio-chemists, pathologists, and bacteriologists," and many would add the agriculturists, will not, ultimately, provide us with a complete picture of the causation of caries, and so place in our hands the means to bring about a higher measure of immunity than at present seems possible of attainment. This day may still be far distant but, in the meantime, a very considerable reduction in the sum of dental disease could be effected forthwith if only the public could be educated in the importance of a healthy mouth, and be persuaded that it was worth while to take some small amount of trouble to preserve their natural teeth in a healthy state. This, the social side of the problem, is, in some ways, of more immediate importance than the scientific one, since oral hygiene is essentially an individual matter, and it would avail but little to discover the means by which dental caries could be prevented unless the great mass of the population were prepared to play their part in carrying them out. The hope here must rest mainly in the younger generations, and it is one of the tragedies of the present situation that the school service has been depleted just as it had begun to make some impression on the arrears of treatment and was able increasingly to turn its attention to the educative and preventive side of its work. The overwhelming demand of adults for treatment has, moreover, left private practitioners with little time to devote to the education of both parents and children and, in the past, this chairside instruction formed one of the most valuable means of enlightening the public on matters of dental health.

The emphasis of the National Health Service on remedial treatment, medical and dental, has rendered the integration of preventive and curative medicine more rather than less difficult, and nowhere is this likely to have more unfortunate results than in the dental field. A generation which has learnt to regard the dentist as a person who extracts an aching tooth, and nothing more, is not likely to be receptive to dental health education. One answer to this part of the problem would seem to be an extension of the employment of dental hygienists in the schools and the concentration of their efforts on the education of the children in the principles of oral hygiene rather than on treatment, except in so far as the latter formed an essential part of



FOR SPEED
AND
STRENGTH

3 PINKS
ANALGESIC
STANDARD
ULTRA RAPID

5 IVORIES
LIGHT
MEDIUM
DARK
BROWN
GREY

AND
CLEAR

FOR:-
RELINING, REPAIRS AND ALTERATIONS
DIRECT FILLINGS, JACKET AND POST CROWNS

· AVAILABLE FROM YOUR USUAL SUPPLIERS ·

SOLE AGENTS:- PORTLAND PLASTICS LTD · ABBEY HOUSE · WESTMINSTER · S.W.1

"AUTOCRYL"

General Information

There are two ways of using dental acrylic resin properly. One is to follow the maker's instructions meticulously, the other is to learn the nature of the materials and their reactions and apply the science and intelligence which the profession can rightly claim to possess, to the task.

The first method is akin to learning to drive a car by "pulling out the choke, pressing the starter, declutching, engaging the first gear, releasing the handbrake . . . " and so on.

The second and more satisfactory method is to learn the principles of the internal combustion engine and transmission and to drive with perfect understanding of what takes place under the bonnet and to enjoy motoring at its best.

" Autocryl " resin, like all dental acrylics, is supplied in monomer and polymer form and from the moment the two are brought into contact with each other, polymerisation follows automatically. The essential difference between ordinary acrylic and " Autocryl " is the *speed* with which " Autocryl " will polymerise at room temperature.

Importance of Pressure

This does not mean that ordinary acrylic will never polymerise at room temperature or that " Autocryl " will not polymerise more rapidly at elevated temperatures. On the contrary, it will do so in a few seconds at 100° centigrade.

Because acrylic monomer cannot polymerise without evolving heat it follows that rapid polymerisation will evolve great heat and this in turn will cause the material to *swell* and become porous, *unless it is compressed during the critical phase.*

This can best be demonstrated by placing a piece of newly mixed " dough " into boiling water when it will rapidly swell, become porous and float, showing that it is lighter than water. This contrasts markedly with the nature of the product if it is *compressed* while it is heated.

Spontaneous Heat

" Autocryl " polymerises automatically in about ten minutes on the bench and in five minutes in the mouth. It evolves appreciable heat in the process, so pressure should always be applied to it, for fillings and denture repairs alike.

Union with Old Acrylic

This speedy and spontaneous reaction is obviously of great value for many purposes but it does not allow sufficient time for the monomer to attack and adhere to cured acrylic, particularly when the latter is waterlogged after use. For this reason it is necessary to apply monomer to the old acrylic *before* preparing the mix, unless a wet mix is used and applied at once, in which case it should be allowed to gel or stiffen a little before pressure is applied to it.

Insulation of Plaster

Wet plaster causes bleaching but dry plaster absorbs vital monomer from the mix, monomer which is needed to bond the particles of powder, so alginate solution or tin foil must be used as a barrier between "Autocryl " and plaster.

Pulpal Danger

Acrylic monomer is an irritant to the pulp and vital dentine. For conservative work, where danger to the pulp is of paramount consideration, the mix should be drier than for repairs, etc., and though hardening will take place spontaneously in a few minutes it is possible to accelerate the process by means of warm air. Compression must of course be maintained, with a strip of cellophane, celluloid or a matrix band. Acceleration is entirely a matter of choice and not of necessity and where the cavity is deep and properly lined with cement, no advantage will accrue from hastening the normal setting time of " Autocryl."

Eugenol and Acrylic

Eugenol readily attacks and softens all acrylics and if used to protect the pulp it must be covered with cement or a film of varnish and the latter dried thoroughly before the final filling is inserted. It is not possible for the varnish solvent to escape, if trapped under a filling.

For very small and shallow cavities "Autocryl" varnish alone will suffice as a lining, if properly applied.

Relining of Dentures

" Autocryl " is of particular value for direct impression and relining of dentures but many patients are allergic to the action of free monomer, and this offers an interesting and difficult problem.

Tissue Reaction

Newly mixed acrylic paste should never be allowed to remain in direct contact with the oral mucosa or excoriation may occur, with serious results for both the patient and dentist.

In general, solvents like chloroform and monomer are harmless if applied to human tissue and *allowed to evaporate* but when trapped and sealed against the tissues, severe injury follows. This occurs with the tough, external skin as well as the delicate mucous membrane and the latter must be protected against such danger.

" Autocryl " Film

In many cases a film of "Autocryl " lubricant on the mucous membrane and on the surface of the acrylic paste will provide a fairly safe barrier, if the denture is not kept in the mouth too long—not more than a minute—but the safest and surest way is to use the thin " Autocryl " film provided, instead of or in addition to the lubricant.

Protective Barriers

The ductility of the film leaves much to be desired but it can and **does** stretch to conform to the irregularities of the gums if pressure is slowly and steadily applied to it while it is kept fairly taut. Test a piece by stretching it over the finger, to observe its properties, before use in the mouth.

If properly used it provides the *perfect* barrier to monomer and leaves no taste or injury behind, after even ten minutes in the mouth.

To prevent creasing it should be stretched over the fitting surface of the denture after the "Autocryl" paste has been applied to the latter, and tension maintained by holding the spare margins of the film firmly over the teeth until the denture has been properly seated, when it may be released to take up its own shape in the impression.

The thickness of the film will scarcely affect the fit, and in many cases, such as Torus Palatinus and other bony prominences, the slight compression it produces on the soft tissues will prove of advantage, by relieving the bony areas and frequently improving the suction.

In those cases where it is desired to embed the denture in plaster and heat it for ten minutes in water after taking the impression, to eliminate the last trace of monomer, the redundant film at the margins should be removed with scissors and the film left attached to the denture until the cure is complete. It will act as a perfect barrier to the plaster, peel readily from the **cured** acrylic and leave a smooth surface on the fitting aspect of the denture.

Residual Monomer

"Autocryl" film may also be used as a separating medium in other processes, such as for repairs. For example, it may be interposed between the denture and the plaster counterhalf, instead of cellophane, or between the denture and the thumb when the latter is used for compression in small repairs or additions. In such cases, no lubricant is needed as the film will come away from the new acrylic *when the cure is complete.*

If the above principles are fully understood, the technician will soon develop his own methods of dealing with the variety of problems for which "Autocryl" will prove the best solution.

"AUTOCRYL" PINK AND CLEAR

Directions for Use

Mixing

The liquid may be added to the powder or vice versa, using a clean spatula and a glass slab, dappen glass or larger vessel, according to the amount required.

Repairs

For repairs of dentures the mix should be somewhat moist, with a trace of free liquid appearing on the surface a few seconds after allowing the mix to stand. It may be applied at once to the denture and allowed to gel in situ, or gelling permitted to take place in the mixing vessel providing that the denture has been wetted with monomer or thin, syrupy monomer/polymer.

Models, Counters and Flasking

Plaster models and simple counters are needed for most repairs and alterations, and complete flasking is desirable for major repairs. Apart from the saving of time the advantage of using "Autocryl" instead of ordinary acrylic for such cases is that the lower curing temperature employed, eliminates the danger of warping, which is so common after repairs.

For small repairs and single tooth replacement, counters are rarely needed and in some cases even the model can be dispensed with, and digital pressure alone will suffice, for the cure. Each case must be decided upon its merits, bearing in mind the need for pressure upon the gelled resin during the cure.

Tooth Additions

When acrylic teeth are being added or replaced it is wise to reinforce the adhesion mechanically, by drilling pits into the tooth and filling them with a little of the "Autocryl" mix while it is moist. The denture may be treated in the same way and the two surfaces united firmly, after gelling and held in that position for at least five minutes.

Partial and Complete Cure

Polymerisation at room temperature proceeds very rapidly under digital, rubber band or clamp pressure, but it cannot compare with the results obtained in a flask at a somewhat higher temperature and the latter should be employed for major repairs.

Clear "Autocryl"

The method of use for Clear "Autocryl" is the same as for Pink but insulation against moisture in the plaster and the use of adequate pressure is more important if optical clarity is to be achieved. A good alginate film and very dry plaster or the use of tin foil is essential for the purpose.

Direct Fillings

Cavities must be undercut or provided with retaining pits and the margins cut square and not bevelled. Deep cavities must be lined with cement and shallow cavities with "Autocryl" or any other good varnish, which must be thoroughly dried before the filling is inserted. The varnish solvent cannot escape if trapped and sealed under the filling.

Eugenol

Eugenol softens all acrylics and when it is necessary to use it to protect the pulp, it must be covered with cement or a thick layer of varnish.

Air Locks

A dry mix should be employed for fillings, jacket and post crowns and applied to the sides and floor of the cavity in such a manner as to avoid trapping air under the filling. Cavities should be slightly overfilled to allow for contraction and pressure maintained by means of a cellophane or celluloid strip while the filling is hardening. Celluloid will adhere to the resin unless coated with "Autocryl" lubricant but no lubricant is needed for cellophane. The latter will separate readily when the filling is hard, and leave a polished surface.

Trimming the Filling

As soon as the filling is hard and the retaining strip removed, the filling may be trimmed with a fine abrasive disc and will be ready for polishing in a few more minutes.

Polishing

It is necessary to remember that acrylic is a *thermoplastic* and will soften with heat. Polishing should be carried out without friction, using a wet buff or Burlew disc and a fine, colourless or white paste. Rouge may become embedded in the filling and cause discoloration.

No wax or varnish should be used to coat the finished filling.

Crowns

Temporary and permanent jacket or post crowns may be readily produced in the mouth with the aid of crown forms if the latter are overfilled to allow for contraction while pressure is maintained. A tiny opening in the bottom of the crown form will permit the escape of excess material and avoid air locks. The vital stump must be well dried and treated with eugenol, dried again and then coated with varnish before the "Autocryl" mix is allowed to cover it, or the pulp will suffer.

Gingival Irritant

The excess of resin which may extrude from the crown form will injure the gum margin unless the latter is coated with varnish or lubricant.

Repair Facings

"Autocryl" will not adhere to gold or other metal and mechanical union must be provided when replacing facings to bridgework in the mouth, if pins or other anchorage are absent. Shallow pits are not good enough but a large, deep and undercut hole is necessary, sometimes right through the backing and countersunk on the lingual side.

Renovations

Newly mixed "Autocryl" will adhere perfectly to the old if the latter is first dried before the new material is applied.

IMPORTANT.—It will be noted that there are three types of Pink "Autocryl" available, Standard, Ultra Rapid and *Analgesic*.

NOTE A.—STANDARD PINK is intended for general use and has the best colour, but Ultra Rapid pink sets more rapidly and evolves an orange tinge when completely hard. The two may be mixed in any proportions as desired, to vary the setting time and colour. When using "Autocryl" for direct impression and relining of dentures, in the absence of a barrier film, the speed with which Ultra Rapid pink hardens, reduces the time it must be kept in the mouth and the danger of irritation.

ANALGESIC PINK is only intended for use in special cases of extreme sensitivity of the gums, upon which it will be found to have a slightly numbing effect. It may be used in exactly the same manner as Standard and Ultra Rapid pinks, or by the ordinary flasking and packing process, curing in fifteen minutes at 50°–60° centigrade. Boiling is unnecessary.

NOTE B.—All "Autocryl" Ivory powders have been prepared as dense colours, primarily intended for direct fillings and may prove to be too dense for crowns and repair facings of considerable bulk.

They may be diluted with "Autocryl" CLEAR to any desired translucency and a mix of one part "Ivory" with two parts Clear is recommended for a crown of medium thickness.

PRICES

PINK (Standard, Ultra Rapid & Analgesic) **& CLEAR**

Utility Pack

1 oz. Liquid
1½ oz. Powder
"Autocryl" Film
Pipette

25/-

1 oz. Liquid only 7 6
1½ oz. Powder „ 17 6

Laboratory Pack

5 oz. Liquid
8 oz. Powder
2 sq. ft. "Autocryl" Film

75/-

5 oz. Liquid only 21 0
8 oz. Powder „ 54 0
Film „ 1 0

IVORY SHADES

Introductory Pack

½ oz. Powder (Light, Medium, Dark, Grey or Brown)
10 c.c. Liquid
5 c.c. Cavity Varnish
Cellophane Strips
Pipette

18/-

Triple Pack (complete)

Three ½ oz. Powders (Light, Med. & Dark)
1 oz. Liquid
Cellophane Strips
Pipette

35/-

½ oz. Powder only (any shade) 10 0
1 oz. Liquid only 7 6

"Autocryl" Lubricant **4/-** "Autocryl" Varnish **2/-**

Printed in England by Staples Printers Limited, at their Great Titchfield Street, London, establishment.

the former. Working under the direction of dental officers, these ancillaries could do much towards ensuring that the rising generation and their parents acquired a sense of the value of a clean mouth. An individual approach of this kind, particularly in the formative years of a child, is likely, in the long run, to have a much greater effect than more formal lectures and demonstrations, valuable though these are in their place.

Contemplating the statistics of the number of dentures supplied under the National Health Service, it would be easy to be pessimistic about the prospects of producing a preventive state of mind in the population generally. The task is, admittedly, a difficult one, but there can be few practitioners with any great length of experience who could not testify that there has been a slow but steady improvement in this respect in regard to, at any rate, some of their patients; and what has been accomplished in respect of one section of the community can assuredly be also accomplished in others.

It is a welcome sign of the times that the Dental Health Education Committee of the Dental Board were able to report that there has been a steady growth in the demand for the material published by the Board. The process of educating the public will, of necessity, be a long one, but if we are to reap the full benefit of the discoveries of science, it is important that it should be regarded as an essential part of the campaign against dental disease and in the promotion of the health of the nation.

NOTES AND COMMENTS

The International Dental Congress, London, 1952

A REPORT of the Organising Committee of the XIth International Dental Congress to the F.D.I. on the Congress to be held in London from July 19 to 26, 1952, shows that the arrangements for the Congress are now well advanced. On the scientific side, twenty reports on various aspects of dentistry are to be given by international experts in their respective fields. These are to be printed in successive numbers of the *International Dental Journal* starting with the September issue this year and will be taken as read. The discussion of each of these reports is to be opened by two selected speakers who are also specialists in the subject of the report. In addition to the section meetings at which these reports are to be considered there are also to be a number of symposia on subjects of topical dental interest. Demonstrations will form a prominent feature of the Congress. The table demonstrations will be given at the Royal Festival Hall and others at the London hospitals. Other features of the Congress are to be a continuous showing of films of dental interest, an oral hygiene exhibition and an exhibition of dental equipment, instruments and materials. The principal events in the social programme include, in addition to a series of receptions, the Congress Ball at the Royal Albert Hall and the Congress Banquet at Grosvenor House. An attractive booklet "Congress Information," giving particulars of the arrangements for the Congress, has been published by the Organising Committee. Copies of this can be obtained on application to the Secretary, XIth International Dental Congress, 13, Hill Street, Berkeley Square, London, W.1. Intending members of the Congress are reminded that as the reports to be discussed are being published in the *International Dental Journal* beforehand, the four issues of that Journal for September and December 1951 and March and June 1952 will form an integral part of the Transactions of the Congress. This arrangement makes it easy for every member of the Congress to study the reports prior to their presentation to the Congress for discussion. The International Journal can be obtained from Cassell and Company Limited, 37-38, St. Andrew's Hill, London, E.C.4, or through any bookseller. Members of the British Dental Association should note that in order to take part in the Congress it is necessary for them to apply for enrolment as members. The necessary forms of application can be obtained on application to the office of the Congress at 13, Hill Street, and a reduced rate of subscription is charged in respect of all applications received during the present year.

The Business of Dentistry

A NUMBER of important points arise out of the case in which the London Executive Council recommended that the sum of £2,000 should be withheld from the remuneration of a practitioner in respect of unsatisfactory treatment carried out by one of his assistants. In the first place it is to be noted that as the assistant's name was not on their dental list the Executive Council were estopped from having the question of his fitness to continue giving treatment under the Health Service investigated by the Tribunal and could only exercise disciplinary control over the assistant indirectly through his principal. In the second place it is possible, without imputing any improper or unworthy motives to the principal involved in this case, to recognise that the case provides an illustration of the possible dangers that might arise if the

principal, who had fourteen practices, instead of being a member of the profession had been a layman who was carrying on "the business of dentistry" and whose primary interest was financial. In such a case the assistant's name would have been on the dental list and the whole weight of any disciplinary procedure, either under the Health Acts or through the Dental Board, would have fallen on him and the principal would be amenable to neither. This danger of the possible commercialisation of dentistry was brought out in the evidence given by the Dental Board and the British Dental Association to the Teviot Committee and led that body to recommend that

"the Dentists Act 1921 should be amended so as to prohibit (subject to certain exceptions) the carrying on of the business of dentistry, either by bodies other than dental companies for which the Act makes provision or by persons who are not registered in the Dentists Register."

Fortunately there is reason to believe that this recommendation has been accepted by the Government and that provisions to that effect will be incorporated in the amending Bill which has already been foreshadowed.

Fluorine in Water Supplies

A NEWS LETTER issued by the Council on Dental Health of the American Dental Association contains the information that fluorine is being added to the water supply of more than one hundred communities in the United States, and that 150 additional cities have approved plans to this end which are expected to be in operation in the near future. The booklet "Fluoridation in the Prevention of Dental Caries" recently reviewed in this column, is being brought up to date and reprinted. The results of these widespread experiments will be watched with interest both in this country and the United States.

The Dentists' Provident Society

THE Report of the Dentists' Provident Society for 1950 shows that steady progress was made during the year. The number of members rose to the new high figure of 3,094 and the contribution income increased by nearly £7,000 to £90,230, whereas sickness claims were increased by only £22. The invested funds of the Society were increased during the year by approximately £60,000 and the total of these is now rapidly nearing the million pound mark. It is of interest to note in this connection that House Purchase Mortgage Loans to members constitute rather more than one-third of the total invested funds. This use of the funds is at once relatively profitable to the Society and a considerable convenience to the individual member who is able to finance the purchase of a house on very favourable terms. It is a tribute to the financial strength of the Society that the cost of purchasing the lease of its new offices looks relatively insignificant in comparison with the other figures in the Balance Sheet. It is still a matter for surprise that so many members of the Association fail to avail themselves of the opportunity, offered to them by the Society, of combining insurance against sickness and accident with the accumulation of a capital sum on retirement on terms more favourable than those obtainable under ordinary insurance policies.

Fifty Years Ago

From the "Journal of the British Dental Association," August 15, 1901.

I REJOICE to see the formation of local dental societies, calling themselves odontological Societies of such and such a place, and it is a very cheering and hopeful sign of the times to see these Societies working together for social and professional advancement, but I should prefer to see such Societies exist as branches or sub-branches of the British Dental Association. They could then, in addition to their local efforts, join in strengthening the British Dental Association in whatever efforts it may be called upon to make on behalf of the profession at large. I want to see the British Dental Association *one united force*, working for the advancement of the profession and with one voice ready to express the needs and requirements, whenever occasion arises, on questions of imperial interest.

From the Presidential Address of Mr. S. J. Hutchinson.

LETTERS TO THE EDITOR

SYMPOSIUM ON THE PREVENTION OF DENTAL DISEASE

SIR,—Shortage of time for full discussion prevented me from complying with the request of one speaker, who wished to hear something of the soil cultivation aspect of the problem.

We have the ages-old biological cultivation, intensified and accelerated by farmyard manures, compost, sheet composting and mixed leys; including subsoil feeders, e.g. chicory, burnet and kidney vetch, methods which husband the soil microflora through which plants derive their nourishment and powers to resist disease.

More recently we have the cult of adding chemicals to boost the output of the old organic farms and the entirely stockless cultivation which depends on chemicals and ploughed in green crops to maintain fertility.

Experiments by Sir Robert McCarrison in 1922 and others since then indicate that there is at least a vitamin B deficiency in crops taken from chemically treated soils.

The Soil Association is conducting a long term field experiment to discover which of these methods of cultivation is best for the land, the crops it grows and the animals which consume them. The stage when it becomes necessary to feed animals on the produce from the three

sections of the Haughley Research farm has now been reached. More land, livestock laboratories and scientists are necessary to do this.

One result of the Haughley Research experiment indicates that it takes 3 or 4 generations before any marked difference can be observed in crops.

The importance of this experiment is fully appreciated by the Dutch Government, who have started, on a larger scale, a similar experiment; following upon a visit of Dutch officials to Haughley.

I wish to conclude with an appeal for everyone in the B.D.A. to join the Soil Association and make every effort to ensure that the work commenced by the late Sir Norman Bennett and his fellow Founders will be completed.

6, *Eaton Road*, *Coventry*. Yours faithfully, STANLEY P. MEACOCK.

THUMB SUCKING

SIR,—I think a finer distinction between cases of thumb and finger sucking than that given by Miss Sclare should be drawn. Most orthodontists will agree that attempts to suppress thumb sucking in children, say of 3 or 4 years of age, are wrong. The concept that these children continue these habits because some affection or love factor is absent in their lives is sheer nonsense. These children are invariably perfectly normal and happy, and attempts at this stage to interfere with the retained infantile habits will lead to psychological states, and abnormal behaviour patterns.

I am appalled at the attempts of parents and orthodontists to correct these children. The methods still in use, ranging from unpleasant drugs, threats and violence to the use of an array of crude appliances, are an indication of the ignorance which persists regarding this problem.

When these infantile habits persist there must come a time when some form of re-education and correction is indicated, and this period is what I term the age of reason, which in my experience is usually between 7 and 8 years of age. A child of this age is amenable to reason and is able to understand the problem when it is explained. He will in most cases tolerate a simple appliance, which Miss Sclare's cases show quickly corrects the habit.

The oral screen is perhaps the most useful appliance for this work, because it makes insertion of the thumb impossible and also acts as a functional orthodontic appliance, correcting open bite, protrusion of the maxillary incisors, and those cases of mandibular retrusion caused by the pressure of the finger or thumb sucking. Miss Sclare's cases have been rapidly successful because they belong to this category and it is by no means coincidence that improvement in the general behaviour occurred at the same time.

These children know of their disability, but being a habit and to them a pleasurable habit, they require help to emerge from the infantile to a more mature pattern of behaviour, and just the reverse of what psychologists say occurs—inhibitions are not created but are lost and the child is free to develop along normal lines physically and mentally.

67, *Rodney Street*, *Liverpool*, 1. Yours faithfully, JOSEPH ANGELMAN.

TOPICAL APPLICATION OF FLUORIDE TO CHILDREN'S TEETH

SIR,—When evaluating any method of caries control, it is extremely important to consider the relationship between the time and effort necessary and the effect which is likely to be achieved. For this reason I was interested to see in Dr. Wynne's paper (*B.D.J.*, **91**, 11) a report on the time and effort involved by the teams topically applying fluorine solution in Washington and Woonsocket, U.S.A.

I have considered this matter in a recent paper (in the press) but my analysis of the situation is by no means so optimistic as that presented by Dr. Wynne. In view of the importance and present interest in this subject, I would like to discuss this matter prior to the publication of my paper.

Considering the possible effect of this treatment, it must be realised that the claimed 40 per cent reduction of dental caries applies only to controlled experiments in which all controllable factors are controlled in order to allow the fluorine a chance of exerting its maximum influence. In field experiments there are more antagonistic factors to overcome and the influence of fluorine becomes less ; in a universal application all antagonistic factors have to be overcome and the influence is even less still. Some of these antagonistic factors are the variances of technique, absences preventing continuity of treatment, the inability to treat teeth immediately on eruption and difficulties in child management. In no way can it be assumed that a 40 per cent reduction could be achieved if this method was universally applied.

The method consists of giving four treatments at the maximum rate of two per week or at the minimum rate of one every two weeks. To be practicable it is suggested that each full treatment be given at the ages 7, 11 and 13 years in order that successively erupting teeth be impregnated. To treat each child each year would be impossible. This method of treating children at the ages mentioned does, however, detract from efficiency because at the age of 7 years not all 1st permanent molars have erupted and quite a number have already decayed : at the age of 11 years, 75 per cent of the second permanent molars have erupted but again quite a few have already decayed. A similar situation applies to the premolars.

Assuming, however, that this technique did achieve a 40 per cent reduction of caries in permanent teeth, the overall reduction, if one includes deciduous teeth, will be only about 20 per cent. In any mixed school population, the number of newly decayed deciduous teeth per year (3 years to 8 years) is practically the same as the annual increase in newly decayed permanent teeth (6 years to 17 years).

To achieve this nebulous result, a great deal of time and effort is needed. The technique involves an initial cleaning of the teeth, the isolation of each half mouth in turn and painting the dried surfaces of the teeth with a 2 per cent NaF solution which is allowed to dry for four minutes. As stated before this is repeated four times and the full course given at the ages of 7, 11 and 13 years.

The technique described by Dr. Wynne gives one the impression of considerable rush but the timings must surely be taken with considerable reserve. For instance, no allowance is made for conditioning of the children (assuredly necessary in some instances), the sterilising

and changing of instruments and the changing round of the children. From my experience, each treatment takes at least an average of 20 minutes. It is also my experience that to ensure against flooding during the drying period, constant supervision is needed even when a saliva ejector and a Garner's cotton-wool roll holder are used. To place a child on an ordinary chair for four minutes without a saliva ejector and without constant supervision appears to me to be most unsatisfactory.

It is noted that cleaning of the teeth is not carried out after the first visit, in spite of the fact that the absence of pre-cleaning is said to reduce the claimed effect by about 50 per cent.

There can be no doubt that to give a thorough treatment without undue rush, and a " continuous belt " atmosphere, 20 minutes is necessary. This means that in 200 five-hour days, 750 full courses can comfortably be given. To apply fluorine day by day and week by week is a monotonous soul destroying job and to expect any person to carry this out at a breakneck speed is risking sheer boredom and inevitable loss of efficiency.

Let us assume, however, that a hygienist is responsible for a school population of 2,500 children : in this population there will be about 600 children in the age groups 7, 11 and 13 years, a number which can satisfactorily be so treated in 160 days. This leaves 40 days per year for absences, talks to children and parents, and clinical work. On this basis at least 2,000 hygienists would be necessary in England and Wales to achieve a caries reduction very much less than 20 per cent and which would be of doubtful duration. The time and effort necessary does not equate to the possible results.

There is just one further point. Dr. Wynne was told that apart from the intrinsic value of fluorine application, the scheme was of value in persuading parents of the value of dental health. This is extremely desirable but, in this country, until the School Dental Service is capable of meeting any extra demand, dental health education, encouraging early and continuous attention, would be extremely unwise.

Yours faithfully,

University of Leeds D. JACKSON.
Dental School and Hospital,
Blundell Street, Leeds, 1.

EFFECT OF CO_2 SPRAY

SIR,—I have for many years advocated the use of the CO_2 spray as manufactured under the name of " Hygienator " by the Sparklet company, for ordinary routine cleansing of the teeth and mouth. It was considered that the spray was best used in conjunction with normal brushing, because, while it was excellent for removing inter-dental debris, it failed to remove the fatty film adhering to the teeth, when used at comfortable pressure.

It seemed to me that regular spraying of the inter-dental spaces, especially in the temporary dentition must do much to reduce the number of interstitial cavities. For some few years, I have become uneasy that this spraying, far from reducing cavities, was actually leading to an increase. Careful observation of a limited number of patients seemed to confirm this. Even then I was not prepared on the limited evidence at my disposal to regard the evidence as conclusive.

Quite by accident I noted the report of Dr. Miller in the House of Representatives, relating to potentially harmful chemicals used in food preservation, etc. The dangers of carbonated drinks in relation to caries was mentioned. It would seem to me that the use of a CO_2 spray twice daily must be potentially much more dangerous than the relatively few carbonated drinks consumed in this country. It is a matter of considerable interest to me and I would welcome the opinions of anyone who has any information on the subject.

I approached the Sparklet company and their reply was that it had never been the policy of the company to advise the professions of the medical aspects of any apparatus they manufactured, but that they were somewhat surprised by my remarks.

Yours faithfully,

138, *Oakham Road,* D. NELSON.
Dudley, Worcs.

Reviews and Abstracts

EUROPEAN ORTHODONTIC SOCIETY. Reports of the Twenty-fourth Annual Congress and the Twenty-fifth Annual Congress, 1947-1948.†

As explained in the editorial note, this volume contains only a selection of the 1947 Proceedings, some papers being in a form unsuitable for publication. The discussions of both years have also had to be omitted because of incomplete reporting due to language difficulties.

Papers by Professor Hotz and Birger Kjellgren advocate serial extraction as a means of preventing malocclusion and avoiding appliance treatment, thereby enabling orthodontists to treat more cases. Dr. Nord, in his paper "Orthodontics for the Masses" also advocates this type of therapy. One cannot help but criticise these papers because they do not attempt to analyse scientifically those cases in which such treatment is indicated. It is inferred that a high percentage of all cases can be treated in this manner, but no figures are given, and one is left with the feeling that either much is to be desired in the end results from the point of view of function in its broadest sense, or else the authors select very carefully the cases for this type of treatment.

Also in the field of early treatment by extraction, Dr. Duyzings advocates the removal of upper canine germs to reduce bone growth in cases of maxillary protrusions. He appears to assume that absence of teeth leads to an under-development of bone, but as all the evidence is against this assumption there would seem to be no scientific basis for this rather heroic procedure in a young patient. It is a pity that a more detailed analysis of cases before and after treatment is not given.

A surgical rather than orthodontic approach is present in C. Bowdler Henry's "Surgical Demonstrations of Sliding Osteotomy of the Ascending Rami in a Case of Mandibular Prognathism (after Kostecka)", and it is time that an orthodontist published analytical work on the types of cases that have been treated and should be treated in this way. It is now known that many cases relapse and that many profiles are not improved.

Dr. Juste has produced a mathematical approach to diagnosis which he says is quicker than the mere geometrical ones of Korkhaus, Pont, Izard, Berger and Muzi, since "we do not have to follow tables in applying it, nor

multiply and divide, but only add and subtract—much simpler operations."

There are two papers on Functional Therapy: "Indications and Contra-indications for the 'Norwegian' System" by Professor O. Hoffer and "A Contribution of the History of Physiotherapeutics in Maxillofacial Orthopædics" by Dr. F. M. Watry. The latter reviews a history of the monobloc appliance, and rightly gives Robin the credit for the original idea. Professor Hoffer makes rather vague statements about "influencing" the joint, ascending ramus and body of the mandible. Surely scientific methods of analysis are available to prove or disprove them once and for all.

Space is too short to permit mention of all the papers reproduced. R. Ernest Rix recapitulates and adds to his original and valuable paper on deglutition. Anders Lundström records an investigation of 202 sets of twins, and the results imply that genetic factors take first place in the production of dento-facial anomalies. Clare Kenneth Madden describes the twin arch technique in detail, and his instructions are clear and are illustrated by excellent pictures. Finally, Professor Seipel is to be congratulated on a critical review of the subject of "Prevention of Malocclusion." He produces facts and figures, and his general theme is that "dental malocclusion is no disease, and cannot be prevented in a simple and uniform way."

The book is a valuable contribution to orthodontic literature. It demonstrates that European orthodontists usually have a more rational approach to their subject than their American counterparts. It is, however, a matter for regret that the majority of the papers lack the kind of analytical scientific approach which distinguishes articles on orthodontics in the American journals. The printers are to be congratulated—the paper is first class, and the illustrations are excellent.

Erectile Cavernous Hemangioma of the Masseter Muscle.—A 19-year-old male presented with a soft mass which had always been present over the angle of the mandible and had not increased in size. At the age of 9 there had been an attempt at surgical removal. On contracting the masseter the mass enlarged and became firm after a delay of about two seconds. At operation the area was fully exposed and a purplish-red vascular mass was found between the parotid gland and the masseter. Although the more superficial part could be separated easily from the adjacent structures its base extended into the body of the masseter and complete removal was not achieved. Hæmorrhage was readily controlled by pressure. Histological examination showed the mass to contain a calcified body and to be composed of strands of muscle between which were multiple blood vessels of varying size and shape, some being merely thin-walled, blood-filled sinuses.—CHIPPS, J. E., and WEILER, T. J. (1951) *Oral Surg.*, **3**, 1509.

A Previously Undescribed Demonstrable Pathologic Condition in Exposed Cementum and the Underlying Dentine.—Extracted teeth with cementum exposed by parodontal disease and which had been fixed in formalin were carefully decalcified for about twenty-four hours. At the end of that time decalcification had progressed far enough for sections to be cut by hand through the cementum and superficial dentine. When the sections were examined by transmitted light highly refractile brownish granules were seen. The granules were both fine and coarse and both separate and in clumps and were strictly limited to the exposed cementum and underlying dentine. In some specimens the granules were mainly in the superficial half of the cementum and in others mainly in the deeper half and were particularly abundant in the granular layer of Tomes. In some specimens the granules conformed to the course of the smaller dentinal tubules and their branches, appearing as strings of spherical bodies. The granules disappeared leaving no trace when treated with alcohol and also appeared to clear slowly in water. By scraping the surface of the sections the granules could be obtained separate from the cementum or dentine matrix. The granules were not found in cementum which had been exposed by abrasion.—BASS, C. C. (1951) *Oral Surg.*, **4**, 641.

THE HEALTH SERVICE

DENTISTS' EARNINGS

REPORT OF COMMITTEE OF PUBLIC ACCOUNTS

EXTRACTS, with varying degrees of emphasis, from the Fourth Report from the Committee of Public Accounts, Session 1950–51 (H.M. Stationery Office, 1s. 3d. net), have appeared in the Press. The whole of the relative paragraphs are reprinted below without comment.

DENTISTS

Many dentists' earnings, in spite of cuts in 1949, appear to have remained much in excess of the Spens proposals, to which the scheme of remuneration was designed to give effect. Even on the unlikely assumption that the original estimate of expenses at 52 per cent of gross earnings has not been falsified as a result of the large and unexpected increase in the amount of work that dentists could perform, the gross equivalent of the net sum proposed by the Spens Committee would be less than £4,000 a year. Fees totalling over £6,000 a year, however, were authorised in 1949 for 25 per cent of the single-handed dentists in the service, and over £12,000 for an appreciable number. Single-handed dentists constitute more than half the total number in the service. The fees actually paid were on average about 3 per cent below those authorised, owing to an interim cut related to total monthly fees, but some dentists found means of evading this cut. Dentists can supplement these fees by charges for private work, but the Departments do not know the extent of private practice or the earnings from it.

A further cut of 10 per cent was imposed in May 1950, pending negotiation with the profession, and the Departments think that this has greatly improved the position. Negotiations are still in progress. These may well be protracted, and it seems that no reliable evidence will be available to Committees of Public Accounts in the meantime to show whether remuneration has at last been brought to a reasonable level.

There also continues to be come evidence of scamped work or even fraud, which the Committee of 1950 were told explained some of the excessive earnings. A few dentists against whom such practices were alleged have been brought before the Tribunals constituted under the National Health Service Acts, and the Tribunals have ordered some of them to be removed from the Health Service lists. The Departments think that the proportion of fraudulent claims is very small, but the Dental

Estimates Boards set up under the Acts to approve dentists' estimates have stated in their statutory reports that they are not able to have as many dentists' work examined as they would like because of the small number of dental officers employed by the Departments as examiners. The Departments agree that the examination their officers have done indicates that they ought to do more, but recruitment has been difficult owing to the much higher income to be obtained from practice in the Dental Service.

SCOTTISH TRIBUNAL

FOLLOWING on a hearing held at Aberdeen on January 3 and 4, 1951, the Tribunal (Scotland) have directed that the name of Mr. Edmund Jessamine of Aberdeen should be removed from the Dental List of the Aberdeen Executive Council.

The findings of the Tribunal cover the cases of ten patients. In some of these the fillings which had been inserted by the respondent dentist were found to be seriously defective in one way or another. In two of the cases amalgam fillings had been so badly condensed as to be easily removed by scraping with a probe. In other cases the dentist had claimed payment for fillings which had not in fact been executed. In another case he had estimated for the provision of a new lower denture and relining the existing upper denture. He duly claimed the fees for this work whereas he had in fact only polished the upper denture and relined the existing lower denture. It appeared from the evidence before the Tribunal that during part of the period under review the dentist was seeing an average of 50 patients a day and that it was a regular thing for him to have patients, sometimes as many as three or four, waiting in the surgery where he was operating on another patient.

£2,000 FINE RECOMMENDED

THE London Executive Council have accepted a recommendation of the Dental Services Committee that the sum of £2,000 in addition to the fees charged should be withheld from the remuneration of a practitioner in respect of two cases treated by one of his assistants.

The Committee found that in one case six fillings and scaling had been completed at one visit of twenty-five minutes, of these, three were small occlusal fillings, another was unsatisfactory and in the other two there were no fillings, there being in one of them " slight indication of enamel damage caused by the application of an instrument to the occlusal aspect of the tooth." In the second case the Committee found that the treatment estimated for included 8 fillings and scaling. This had been completed in one visit of approximately thirty minutes. Six of the fillings were unsatisfactory and in each of the other two teeth no filling was present.

The Committee say that " It is apparent the chief concern of this dentist has been to get through as much work as possible in the shortest time and that scant consideration has been given to the question of the dental fitness of the patient."

The Committee observe that, if they had not been precluded by the Regulations from doing so, they would have recommended that representations should have been made to the Tribunal that the continued participation of the assistant in the Service would be prejudicial to its efficiency. With regard to the principal, who has fourteen practices, the Committee say that he had failed to exercise proper supervision over the activities of his assistant and had been satisfied to draw substantial fees from public funds and to regard the welfare of his patients as of secondary importance.

APPROVED MATERIALS

THE Minister of Health has approved Portex Co-Pol acrylic denture base for the purposes of the National Health Service.

Approval has also been given for the use of Croform Cobalt Chromium Alloy. The Scale of Fees contains no specific fee for denture bases of Croform Cobalt Chromium Alloy or similar alloy, practitioners using such material should, therefore, submit claims under Item 24 of the Scale of Fees.

IDENTITY CARDS

Mr. MARQUAND, Minister of Health, replying, on August 2, to a series of questions on the use of identity cards, said that their use avoided difficulty in establishing identity when application was made for dental or other treatment. If there had been no National Register he would have had to invent one of his own for the National Health Service. Dentists were not entitled to demand the production of their patients' identity cards but patients were asked to give their National Registration numbers as an additional means of identification and normally did so. He agreed that it was difficult for a dentist to be sure of the accuracy of the number he put on a form if the patient did not co-operate, but he could not see any easy remedy for that. Asked if names would not do, Mr. Marquand said that if his questioner had lived in Wales he would know that there were thousands of David John Williams. It was enormously more convenient to have numbers which did no one any harm.

EMERGENCY TREATMENT, CARDIFF

MR. G. THOMAS asked the Minister of Health, on July 26, whether he was aware of the distress caused in the Cardiff West constituency by certain dentists who refuse to give immediate treatment under the National Health Scheme to persons suffering from acute toothache, but who offered to give the necessary treatment if the patient made a cash payment of 12s. 6d., and what action he proposed to take in this connection.

Mr. Blenkinsop said " No "; and added that persons in urgent need of emergency treatment should get in touch with the Executive Council who would always help them to find a dentist who would provide the necessary treatment under the Service.

MATERNITY AND CHILD WELFARE DENTAL CARE

IN a written reply to questions on August 2, regarding dental treatment, including the provision of dentures, for expectant and nursing mothers, the Minister of Health said that it was the statutory duty of all local health authorities to arrange for the dental care of these priority cases. Some authorities, however, had been unable to carry out their proposals because of difficulty in obtaining the dentists required. In such cases dentures were obtainable under the General Dental Service and the Assistance Board was available for hardship cases in the usual way.

Public Dental Service

NOTTINGHAMSHIRE COUNTY COUNCIL ANNUAL REPORT, 1949

THE School Medical Officer, Dr. Tilbits, reports that during the year the dental staff position had become decidedly worse. In a scathing sentence he observes that " the deterioration of the dental condition of the school population was accordingly well maintained." The Senior Dental Officer, Mr. Mason, with admirable restraint, sets out the facts. By the end of the year only six dental officers (including the senior) were left to deal

with approximately 72,000 school children and the priority services. Four full-time officers and one part-time had resigned during the year. The authorised establishment is one senior and twenty-three officers. Inevitably, limitations had to be imposed. First, treatment was restricted only to those most urgently in need of it, the others were encouraged to seek treatment through the general dental service. This did not work smoothly, the children were caught between the upper and nether millstones of staff shortage and general dental service congestion. Emergency cases crowded out the routine sessions and attendances were variable and uncontrolled. Finally, at the end of the year, an appointment system was arranged for all "casual attenders." There was here an obvious anxiety to give the child in pain a priority deal. Of the 28,518 children inspected, 4,017 were casual cases and 24,501 received a routine dental inspection and "in actual fact, only 16,770 could be referred for treatment." Against the total school population of 72,000, these figures speak for themselves. In all, 13,484 received treatment, but, as the Senior Dental Officer points out, these included the casuals and many other cases for whom only emergency work could be done. Orthodontic cases are directly referred to a consultant, the cost being borne by the Education Committee. Mr. Mason describes the position in the only term possible as being disastrous and likely to become worse. Perhaps he can find some dubious comfort in the philosophic caption at the beginning of this Report.

"Things past belong to memory alone :
Things future are the property of hope."

THE SCHOOL DENTAL SERVICE

OPENING the debate on the Education Estimates on July 24, Miss Horsburgh said that there were only 717 school dental officers. If they were to have one dentist to every 3,000 children they should have 1,900. The failure to deal with this matter was the more serious because both the Coalition Government in 1944 and the Labour Government in 1945 knew that it was quite impossible to have a full comprehensive dental service without injuring that for the children. To deprive children of dental care simply meant that another generation would grow up with their teeth in a state of disease and it would be necessary to begin the whole course over again. She had heard it suggested that people not fully qualified should be brought in to help to look after the children's teeth but she urged the Minister to realise that the greatest skill was needed in looking after children's teeth. She added that she thought it would be a great setback to the health of the children and the welfare of the next generation if unskilled people were given the care of children's teeth.

Mr. Tomlinson, Minister of Education, replying to the debate, said it was true that the National Health Service had interfered with the school service. They had lost something like 250 school dentists and to the 717 who remained he wanted to say publicly "Thank you for having remained with the children." Continuing, he said, they had now got an agreement under which better salaries were being paid. He hoped they would be able to build up the service again, but that depended entirely upon the response to the appeals being made based on the new salary rates.

DENTAL NURSES

IN a written reply to a question on August 2 regarding the introduction of New Zealand Dental Nurses into the school dental service, the Minister of Education said that he and the Minister of Health were still considering the report made last year by the United Kingdom Dental Mission to New Zealand and were not yet in a position to make a statement.

NUMBER OF SCHOOL DENTISTS

IN a written reply on July 26 the Minister of Education gave the number of dental officers in the school dental service at the end of 1950 as equivalent to 717 full-time officers as compared with 738 at the end of 1949.

DENTAL NEWS

THE CARTWRIGHT PRIZE

THE Royal College of Surgeons of England announce that the next award of the Cartwright Prize will be for the five years ending December 31, 1955. The Prize consists of a bronze medal and an honorarium of £105. The subject for the essays to be submitted in competition for the Prize is "The diagnosis and treatment of fibro-osseous enlargements of the jaws." Candidates for the Prize must be engaged in the study or practice of dental surgery and possess qualifications registrable under the Medical Acts of the United Kingdom. A diploma or licence in dental surgery without a medical or surgical diploma or degree will not be a sufficient qualification.

Full particulars regarding the conditions of the competition for the Prize can be obtained on application to the Secretary, Faculty of Dental Surgery, Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2.

EASTMAN DENTAL HOSPITAL

Courses in Dental Mechanics

THREE Courses in Dental Mechanics for adult technicians will be held during the winter months at the Institute of Dental Surgery, Eastman Dental Hospital. The Courses will be:

Dentures.—Alternate Tuesdays, commencing on October 9, 1951: Procedures in the fabrication of full and partial dentures, including adjustable articulation, clasp surveying, denture designing, stabilisation of difficult lowers and techniques for casting precious metals and chrome-cobalt alloys.

Crowns and Bridgework.—Alternate Thursdays, commencing on October 11, 1951: The making of crowns, inlays, fixed and fixed-movable bridges and other appliances employed in mouth rehabilitation. The study of tooth anatomy.

Orthodontics.—Alternate Wednesdays, excluding December 26, commencing on October 17, 1951: Lectures and lecture-demonstrations in the fundamentals of the functional anatomy of the oral tissues. The construction of removable, functional and fixed orthodontic appliances.

There will be twelve sessions in each course from 6.30 p.m. to 8 p.m.

Each course will be limited to 30 members and application to attend more than one course will only be considered if vacancies remain on the night of enrolment —Monday, September 17, 1951, at 6.30 p.m.

The fee for each course will be 30s.

Further particulars and enrolment forms may be obtained from the Eastman Dental Hospital, Gray's Inn Road, London, W.C.1. Envelopes should be marked "Dental Technicians Courses."

FOREIGN DENTISTS

IN a written reply on July 19 the Minister of Health said that he hoped to include proposals for new methods of assessing the qualifications of foreign-trained dentists in a Bill which the Government intended to introduce at an early opportunity.

DENTAL DISEASE—RESEARCH

On July 12 the Minister of Health was asked by Mr. Janner (*Leicester N.W.*) to consider the setting up of a permanent research committee to investigate dental disease and evolve methods of prevention of this disease with a view primarily to applying recommendations made by such a committee to the treatment of children's teeth from an early age and so gradually improving the teeth of the nation.

The Minister said in a written reply that research in this field was the responsibility of the Medical Research Council which already had a special permanent committee to carry out dental investigations. The object which Mr. Janner had in mind was therefore already fully covered.

DENTISTS IN SCOTLAND

Replying to Mr. Malcolm MacPherson, on July 17, who asked what steps the Secretary of State for Scotland was taking to recruit the additional dentists needed in Scotland, Miss Herbison said it was hoped that the improvement recently negotiated in the salary scales of school dentists would enable the local authorities to recruit more dentists for the school and other priority services. As regards the strength of the profession as a whole, the intake of students to Scottish Dental Schools would, shortly, be increased on the completion of structural alterations now proceeding at Edinburgh Dental Hospital and School. Replying to a supplementary question, Miss Herbison agreed that the reason there had not been an appreciable increase in the number of dentists was entirely the physical one of a lack of accommodation.

The Schools

Durham University.—Personal Professorships have been awarded to Mr. G. G. T. Tregarthen, M.D.S., F.D.S., Reader in Dental Prosthetics, and Mr. G. E. M. Hallett, F.D.S., H.D.D., Reader in Children's Dentistry.

Sheffield University.—Mr. J. Clarke, L.D.S.Sheff., has been appointed Lecturer in Operative Dental Surgery.

Feared Shortage of Denture Patients.—At a recent meeting of the South-Eastern Regional Hospital Board (Scotland) fears were expressed that, following the introduction of charges for dentures, not sufficient denture cases would be forthcoming for the teaching of students. It was reported that the numbers attending for dentures at Edinburgh Dental Hospital had dropped to 23 and 27 per month, whereas it was estimated that an average of 75 cases per month was needed for the purposes of training students. A similar position, it was stated, had been reported at the Dundee and Glasgow Dental Hospitals.

Obituary

LAURENCE H. POLLITT, L.D.S.Manc.

The dental profession in general, and the Public Dental Service in particular, has suffered a grievous loss in the untimely death of Laurence H. Pollitt.

Laurence Pollitt was a student of the Manchester University and Dental School and qualified in 1925. After a few years of private practice in the Manchester suburb of Stretford, he accepted an appointment as School Dental Officer under the Salford Corporation, eventually becoming the first Senior Dental Officer to that authority.

The tact and sagacity which he manifested enabled him to overcome the many difficulties and worries that his position entailed, especially during the last few years. The writer, who had the privilege of assisting him for a short period, can testify to the respect and, indeed, affection with which he was regarded by his colleagues and also by the most junior members of his staff.

The apparent frailty of his stature was a delusion. He was an excellent athlete and at one time was a successful cricketer—being especially brilliant as a fast bowler. His absorbing passion, however, was for mountain climbing. An experienced and active member of several mountaineering clubs and kindred associations, he spent practically every vacation following his favourite pastime. For several years he had taken his summer holidays, trekking with a congenial companion, amongst the Swiss Alps. This year he followed his usual custom but, on July 30, he met with a fatal accident whilst climbing in the Valaise Alps and his body was laid to rest at Vevey, amidst the mountains he loved so well.

Laurence Pollitt was 49 years of age and unmarried. He is survived by an elder brother who is also engaged in the Public Dental Service. H. W.

Dr. J. L. Burn, Medical Officer of Health, Salford, writes: "For twenty years, Mr. Pollitt served the School Dental Service in Salford. He also gave dental care to expectant and nursing mothers and pre-school children and to patients in general and infectious diseases hospitals. Many thousands of children and adults passed under his excellent and painstaking care and he left with them an impression of a very gentle and attractive personality. He will be sorely missed on personal as well as professional grounds by his colleagues not only in the Salford Health Department but also among the profession locally, with whom his memory will live.

"During the last few years he expressed his determination not to go climbing again, but the call proved irresistible. He was a most cautious climber and his climbing colleagues are at a loss to account for such a tragic accident."

John Henry Skerritt, M.D.S.Sheff., L.D.S.Eng., of Sheffield, died on August 5 after a long illness. He qualified in 1909 and was elected to the B.D.A. in 1913. He served as a dental officer in the 1914-18 war. He had been hon. dental surgeon, Sheffield Royal Hospital, clinical lecturer on operative dental surgery at Sheffield University and was a Past-master of the Neville Talbot Lodge of Freemasons. He leaves a widow and one daughter.

Our Diary

Thursday, September 13.

The Society of Dental Anæsthetists—London and Southern Counties Branch.—Lecture, Eastman Dental Hospital, Gray's Inn Road, London, W.C.1, 7.30 p.m. "Anæsthesia in its Relation to the Heart," Dr. N. D. McCreath.

Friday, September 21.

Surgical Instrument Manufacturers' Association (Inc.)—Dental Laboratories Section.—78, Mount Pleasant, Liverpool 3, 7.30 p.m. Recorded repeat of Dental Brains Trust, June, Caxton Hall. Tickets from Hon. Sec., E. Flitcroft, 353 Lord Street, Southport. Members of profession, their staffs and laboratory owners welcome.

Tuesday, September 25.

Preston, Leyland and Chorley Section.—Starkie House, Preston, 7.30 p.m.

Friday, September 28.

Bognor Regis, Chichester and District Section.—Dinner Meeting, Sefton Lodge Hotel, Bognor Regis, 7.30 p.m. "Original Communications."

BRITISH DENTAL JOURNAL

Communications with regard to editorial business should be addressed to THE EDITOR, *BRITISH DENTAL JOURNAL*, 13, Hill Street, Berkeley Square, London, W.1. Telephone: Grosvenor 2761. Telegrams: "Bridention," Audley, London.

Original Articles and Letters submitted for publication are presumed to be offered to the *British Dental Journal* only unless the contrary is stated.

ADVERTISEMENTS should be addressed to the Advertisement Manager, 13, Hill Street, Berkeley Square, London, W.1. Telephone: Grosvenor 2761.

BRITISH DENTAL JOURNAL SUPPLEMENT

August 21, 1951

ASSOCIATION NOTICES

BRITISH DENTAL ASSOCIATION

13, Hill Street, Berkeley Square, London, W.1.
Telegrams: "Bridention," Audley, London.
Telephone Nos.: Grosvenor 1592, 1593.
Journal Office: **Grosvenor 2761.**
XI INTERNATIONAL DENTAL CONGRESS
GROsvenor 3020
Dentist's Provident Society and Dentist's Insurance Committee.
Telephone No.: GROsvenor 1172.

XI INTERNATIONAL DENTAL CONGRESS

London, July 19–26, 1952

PATRON HIS MAJESTY THE KING

THE XIth International Dental Congress is to be held in London on the invitation of the British Dental Association from Saturday, July 19 to Saturday, July 26, 1952.

The programme already arranged includes twenty scientific reports covering all branches of dentistry and a comprehensive series of demonstrations. Further particulars of the programme and of the social events to be held in connection with the Congress will be published from time to time in the Journal. In the meantime members are reminded that, in order to take part in the Congress, it is necessary for them to enrol as members and to pay the subscription. Forms of enrolment can be obtained on application to the office of the Congress at 13, Hill Street, Berkeley Square, London, W.1.

Branches and Sections

Eastern Counties Branch—Election of Branch Representatives.—Nominations are invited for the election at the Eastern Counties Branch Annual Meeting of three members of the reorganised Eastern Counties Branch, one of whom shall be a Dentist 1921, to the Representative Board which is to take office in January 1952.

All nominations must be signed by not less than three members and must be in the hands of the Branch Hon. Secretary, Leonard R. Davey, 9, London Road, Kettering, on or before September 5, 1951.

THE LOST HORIZON

AN abstract from the Presidential Address given to the Metropolitan Branch on December 7, 1950, by C. A. Wakeford.

After an introduction the subject of dental quality was discussed:

Let them, he said, consider two amalgam fillings, one done by Operator "A", the other done by Operator "B"; and let them assume that Operator "A" had just qualified from his dental school where he had absorbed its traditions and its spirit. "A's" operative sequence was familiar: the X-ray, the injection, the extension to immune areas, the enamel walls stoned at right angles, the resistance form, the retention form, the line angles, the point angles, the cavity toilet, the neutral lining, the matrix band fitted and contoured over a cervical wedge, the precision mix with an alloy of the highest specification, the overfilling of the edges, the trimming to bite, anatomy, and contact, and the final fine polishing.

"A's" filling had been done with complete awareness of the physical and chemical constants and variables of his materials, and with full consciousness of the reactions of the live tissue in which he worked.

Operator "B" took little or no pains with the preparation and the insertion and finishing of the amalgam; but both these fillings, of which there was no legislatable or enforceable definition, commanded exactly the same cash price. What was the result?

Operator "A" had the satisfaction of having done, within the limits of his material, his best for a fellow being. But the satisfaction was not very solid when he and his wife considered the fees for the education of their children and considered Mr. "B", driving Mrs. "B", summer ermine clad, in a newer and shinier car.

The effect in Dentistry was as certain as in Economics: they could call it "Gresham's Dental Law"—"Bad dentistry drives out good and the evil spreads over the whole."

Continuing, Mr. Wakeford said that besides being subject to new temptations (new, because the State has not before provided unlimited patients and offered the same cash sum for dental commodities of entirely different quality and value) the dentist was subject to new pressures. He was, for example, subject to an administrative pressure over which he had no control.

The attitude of the Administrator depended upon his mental stature, upon his tone of mind, upon the level and quality of his dental experience and upon the length of time he had been divorced from the chairside. But, he was part of the machine, and he wished, reasonably enough, to streamline his organisation for smooth working. Therefore, any suggested treatment which led to more labour than was usual for routine procedures, any treatment about which there might be a difference of opinion, any treatment which might be outside the Administrator's dental experience or any treatment the cost of which might be questioned by the Treasury Official ever at his elbow: any of these treatments tended to be discouraged, consciously or subconsciously, by any legitimate means—extra correspondence, "reference back," postponement of decision, insistence upon an uneconomic fee: any, or all of these, together with the constant use of the slogan—"*You must remember this is a Health Service.*"

Thus, the best interests of the patient might well become secondary to the best interests of the Administrator. And the dentist, overwhelmed with work, gave up the battle. He might remember the words of Milton in "*Areopagitica*":

> "Should ye set an *Oligarchy* of twenty ingrossers over us, to bring a famin upon our minds again when we shall know nothing but what is measur'd to us by their bushel?"

Besides administrative pressure, the dentist had now become liable to political pressure; and all the well-

known political techniques were used to adapt him to a preconceived or to an expedient form. If, for instance, it was intended arbitrarily to reduce dental payments, then the exaggerated incomes of a small percentage of the profession were loudly publicised ; so that dental earnings in general became a music hall joke. The dentist was then publicly whipped for the misdeeds of a few and his whole profession tarred by their brush. Finally, softened up with such " vogue phrases" as " *in the interests of the community* " or " *the taxpayer must be protected* " and, totally unable to obtain any counter publicity, once again the dentist conformed.

The dentist, of course, was fully aware of his situation. Daily he made more difficult diagnoses. He knew how good—and how bad he could be. He knew, for instance, that, at his best, he was capable of work of a quality, of an elegance, and of so high a standard that it was in fact, for all its scientific background, a work of art : not an art for art's sake but a secret and unpublic art, performed in living tissue, on a sentient and transient canvas, partially appreciated by its recipient and only fully appreciated by a dental surgeon of his own quality.

This art " hit no headlines " but its validity as art was not affected by those conditions. They had all seen dentures of such form, design, and structural vitality that a Cellini would have been proud to sign them ; they had all seen mouths rebuilt and reconstructed, with the schematic rhythm and tonality of a Fabergé ; and they had all, much too rarely, in creating, or attempting to create such work, experienced that indefinable thrill of satisfaction and justification without which dental life was not worth living.

The Philistine, bathed in his own mediocrity and envious of such values, brushed them aside with a " smear label "—" *luxury dentistry*." But the dentist knew that they applied to any work done in the mouth with maximum knowledge, intelligence and application.

Why then as he saw his quality submerged by quantity did he continue to conform ?

Perhaps the beginning of the answer was : that the dentist, bred to the Hippocratic ethic and conditioned to the ideal—" This patient—thy centre "—was, and is, willing to sacrifice much of his art, many of his ancient traditions and etiquettes to put into action the great humanistic conception that no human being who lacks money should lack treatment. And perhaps the end of the answer was : that, offered a fee which then allowed him the same income for the same quality of work, he disregarded all warnings and waited for no safeguards. But, now, placing due and full accent on the great numbers who have received treatment, the dentist saw the difference between the principle and the performance ; saw the ideal overwhelmed with the side reactions ; saw the emphasis shifted from the patient to the administrator, from the patient to the politician.

Why did he continue to allow himself to be moulded like warm wax ? What should be his action ?

If they suggested, at the present moment, more meetings, they must agree that the wry smile on the face of the officer of the Association would be more than justified. He had heard, in that very room, a universal diapason of voices shouting " Never ! " " Never ! " ; yet, within a day, within a week, within a short month almost every voice had given itself the lie.

There would, however, occur very shortly the opportunity when, like the characters of " The Cocktail Party," they could " work out their salvation with diligence." But it would be a slow process, with no magic, no heroics and no drama. When the Association Re-organising Committee made its final recommendations, each branch, section, new or old, could organise a crusade—if necessary, a house-to-house canvass to de-winkle the individual and make him an interested and live member of his section and of his branch, with an attitude of " *What can I give ?* "," *How can I contribute ?* " and not " *What do I get for my four guineas ?* " In this way the committees of the branch would become less like a family of Pharaohs ; an action which had already been aided in a most welcome way by the recent whole blood transfusion from their brother societies. What was required was a resurrection, a renewal, a renaissance of the dental individual to mould his own destiny according to his own ideals, according to his own values.

It would appear, however, that he had " learnt a style from a despair " and, comforting his conscience with "*Well anyhow, whatever you say, the Health Service has come to stay*," had decided to ride out the cuts as they came and to give proportional value to the public by reducing his time and his quality, knowing well—knowing very well—that no politician, no administrator could beat the dentist at his own chairside.

If this was so, they should cease to instruct their youth by " *constant visions of excellence* " ; cease to encharge him with an ethic that would be as much use as a "sundyall in a grave"; and educate him for maximum speed in a low-grade dentistry.

Then, he said, the dental surgeon might well raise his supplicatory hands to Heaven and say " Give me back my heart."

Central Counties Branch.—The Annual Meeting of the Branch was held in Birmingham on Saturday, June 9. It was preceded, as usual, by the Annual Dinner held in the Midland Hotel at which 84 members and their friends were present. Amongst the distinguished guests were The Lord Mayor and Lady Mayoress of Birmingham, Mr. H. T. Roper-Hall (President of the Association) and Mrs. Roper-Hall, Professor A. P. Thomson (Dean of the Faculty of Medicine of Birmingham University) and Mr. and Mrs. Arthur Condry. During the course of the evening members were entertained by Mr. W. J. Bate, L.D.S.Birm., and the golf trophy was presented to Mr. R. O. Walker.

At the Annual Meeting the following Office-Bearers for the ensuing year were elected: *President*—Mr. R. C. Hunter. *President Elect*—Mr. A. F. Stammers. *Treasurer*—Mr. W. J. Bate. *Secretariat*—Mr. R. O. Walker, Mr. C. G. Boothroyd, Mr. S. D. Vincent.

Delivering his Valedictory Address, the retiring President, Mr. S. P. Meacock, said that in his Inaugural Address last October he told them of many indications that the method of cultivation could make or mar the power of food to nourish the body in all three directions, energy, growth and protection.

He had since tried to direct the Association's course towards a state of better nourished people but he had failed to carry the Priority Classes Committee with him when he pressed for a school midday meal containing all the protective qualities of the one provided by the late Dr. Weston Price.

It was obvious that without food reform more dentists would be needed and amongst the ideas which had been

mooted, was the possibility of expanding the output of the dental schools by using the equipped laboratories, idle all day and used at nights only for technicians' classes, and by teaching anatomy by dissecting the lower animals and using the modern models of human dissections; and using the accommodation in the dental schools entirely for the clinical part of the training.

Mr. Meacock then inducted Mr. R. C. Hunter into the Chair.

The latter in his Inaugural Address said that the Central Counties Branch of the Association had been foremost in consolidating the good effects of amalgamation; and he regarded his accession to the Presidential Chair, as a further example of their determination to continue to do so.

It was, he said, the duty of the Association to lead as well as represent the profession as a whole. New dental legislation was imminent; development and improvement of the National Health Service were imperative. In dealing with, or achieving, these things it was vital that the advice, and to some extent, the direction, of the profession itself, should be sought both in the professional and administrative fields.

Concluding, he urged the members to support the activities of the Association and to take advantage of the opportunity afforded through it to serve the profession.

Mr. Roper-Hall and Mr. Arthur Condry both addressed the meeting and gave members a résumé of the activities of the Association during the past year.

During the discussion which followed Mr. Teall raised the question of Branch representation on the Representative Board and a Resolution with suggested amendments to the present method of estimating representation was adopted for submission to Headquarters.

It was a matter of regret that only fifty-five Members were present at this meeting.

After lunch a few members and ladies took the opportunity offered by the City Museum and Art Gallery to visit the Art Gallery where a party was conducted round by Mr. Trenchard Cox.

Altogether during the Annual Meeting the sum of £24 was collected for the Benevolent Fund.

DENTISTS' PROVIDENT SOCIETY

THE Annual Meeting of the Dentists' Provident Society was held at 13, Hill Street on May 30, 1951. Mr. S. A. Riddett, Chairman of the Society, presided. Mr. V. W. Humpherson, Hon. Treasurer, presenting the accounts said that although other Holloway societies had been faced with an increased number of claims, sickness benefit paid by the Society showed an increase for the year of only £22 despite the fact that members' contributions had increased by nearly £7,000. Interest on members' balance had been maintained at 4 per cent and an apportionment of £1 8s.6d. per share had been made. The Reserve Fund had been increased by £1,149. The Report and Accounts were adopted. Regret was expressed that Mr. Riddett, having reached the age limit, was retiring from the chairmanship of the Society, and tributes were paid to the value of his work on behalf of the Society. Mr. Warren Harvey was elected to succeed Mr. Riddett as Chairman. Other officers elected were Mr. V. W. Humpherson, Hon. Treasurer, and Mr. E. S. Tait, Vice-Chairman. The committee was re-elected with the addition of Mr. W. L. Boness and Mr. Leslie Sparey in place of Mr. P. J. Proud and Mr. S. Todd who had retired.

Correspondence

The Public Dental Service and Dilutees.—To the majority of those of us who still remain in the Public Dental Service the news that we may expect legislation to introduce school dental nurses something after the New Zealand type has come with bewildering swiftness ; and those of us who are the younger men in the school service must examine most carefully the probable effect of such a measure on our future professional life. Many of us, loving the practical aspect of pedodontic specialisation, and regarding administrative or advisory duties with extreme disfavour would welcome authoritative assurance that such need not be our fate in the years to come.

We do not know, probably it is not yet decided, what modification of the New Zealand scheme will be applied to this country, but some factors require most careful thought and do not appear to have been discussed in the limited correspondence hitherto published on this subject.

The financial aspect is a very serious one. In New Zealand one dental nurse deals with but one-sixth of the number of children considered the optimum allocation to a fully qualified surgeon in this country, and yet anything outside of her limited sphere must still be referred elsewhere. Some thirty years of the New Zealand scheme do not appear to have produced a good result ; the teeth of the adult population are reputedly amongst the worst in the world, and an American observer of note has commented unfavourably on the quality of the treatment given. There may be an explanation for this state of affairs—but if so it should be given with the least possible delay.

It is the writer's belief that most conservative work on the permanent teeth of children requires analgesia either by inhalation or injection—in both of which procedures the New Zealand nurse is untrained. Admittedly she understands local analgesia, but this is at best a poor alternative to regional routes and in the treatment of lower molars, for example, is useless unless given by a method causing considerable damage to parodontal tissues.

We must consider also the professional aspect of such a scheme. We have before us the example of the teaching profession who by admitting Government sponsored dilutees to their ranks have thereby greatly lowered their status and driven from their ranks many of the best of their number. The graduate teacher is now a rarity, and the standard of education rather debatable. The teaching profession could have refused to staff the emergency colleges, many have told me that they wish this step had been taken, so let us not forget that we also could refuse to train dental dilutees—a trump card that we must be careful to retain in our possession.

In conversation I have been asked on occasion for an alternative to dilution so that the needs of the priority classes may be met ; there is an alternative of course, and one likely to be both relatively inexpensive and efficient. Let State Funds be concentrated on four things :

(1) Research into the causation and prevention of oral diseases.
(2) Dental health education of the public on the widest possible scale, particularly amongst the priority classes.
(3) The increasing of dental student accommodation and the wider provision of grants to those suitably qualified for training as dental surgeons.

(4) The adjustment of expenditure within the Health Services as a whole to render the Public Dental Service attractive as a career, and true concentration of all resources on the treatment of those whose natural dentitions are not yet beyond repair.

As a profession we could be relied upon to give willing co-operation, few professions have ever shown the energy and ability of our own in the last few years and it remains only to direct that energy where it is most needed.

Finally, a plea for that neglected maid-of-all-work, the dental attendant. She is our most valuable assistant and should be given training, qualifications, and title. Within the public service her field could include dental health education of patients in the surgery, in the lecture hall, and, most important of all, in the schools. It may include on the practical side, radiography, the casting of models and making of bite blocks, the polishing of adjusted dentures, simple dispensing, pre- and post-operative care of patients, the preparation of certain simple pathological procedures, the care of instruments, and last but not least immaculate chairside assistance—attending to one's every need. Clerical duties should be excluded from her domain and delegated to others of varying status according to the level at which these duties are undertaken and the size of the service. Such trained assistants may save 50 per cent of the dental surgeon's operative time, a percentage not likely to be obtained with any other type of personnel.

In conclusion may the writer, a not very frequent correspondent in professional columns, express the sincere hope that his letter will at least provoke discussion and aid both the solution of our present problems and the safeguarding of our professional status.—DONALD W. HUNT, *Dental Clinic, Hope Street, Grimsby.*

Grant-in-Aid.—I learnt with regret that the British Dental Association is committed to a policy of pressing for a method of remuneration in the General Dental Service which incorporates the principle of " grant-in-aid," and I am sure the majority of members do not want it. I have always thought that it would be impossible to devise a worse system of remuneration than the present Scale of Fees. Well, I was wrong, the " grant-in-aid " is even worse. It does not require very much sagacity to foresee precisely what would happen if it were introduced ; the dentists in the industrial and poorer areas would have to carry out all the treatment for the amount of the " grant-in-aid," and in the more exclusive practices, the " grant-in-aid " would be regarded as a little extra tit-bit, thrown in, so to speak. My objection to the Scale of Fees is that, amongst other evils, it encourages speed for the sake of speed—the faster you work the more you earn. Everyone knows that good surgery is deliberate, and that really means you should do your treatment carefully, cautiously and slowly. While on the subject of the Scale of Fees, I should like to ask those who negotiated it, if they are themselves satisfied with a fee of about £8 for a full upper and lower denture, and about 11d. per tooth for extractions ; it seems to me it was their design to bring the profession into bankruptcy. In my opinion, the only reasonable system of remuneration is by means of a fee *per capita*, i.e. the same as the doctors have, and which has worked well ever since the first days of the National Health Service. The case for capitation was so well put by Mr. Peter C. Todd in his letter published in the *B.D.J.* Supp., August 7, page 17, that I cannot do better than refer members to it.—P. B. JOHN, 48, *Birch Grove, West Acton, W.3.*

NEW MEMBERS

(E.S.) ALEXANDER, George Douglas, L.D.S.Edin., 1, Buccleuch Place, Hawick, Roxburghshire.

(N.S.) ALLAN, Thomas Johnston, L.D.S.Glasg., 4, Rubislaw Place, Aberdeen.

(E.M.) BEASLEY, John Edward, L.D.S.Sheff., Springfield, Hazelwood Road, Duffield, Derby.

(N.C.) BRUCE, Montague Marks, Dentists Act, 23, Woodlands Road, Darlington.

(E.M.) CHORLEY, Eric William, L.D.S.Sheff., 35, Normanton Road, Derby.

(S.C.) CLARK, Eldred Robert Wraighte, L.D.S.Lpool., 10, Beech Avenue, Bracklesham Bay, Near Chichester, Sussex.

(M.) DAWSON-SQUIBB, Leslie, L.D.S.Eng., 91, Hamilton Terrace, London, N.W.8.

(M.) DOVE, Raymond Ankrah Cobblah, B.D.S.Lond., L.D.S.Eng., 323, Walworth Road, London, S.E.17.

(E.C.) DREEBIN, Leonard Harold, L.D.S.Durh. (Flight Lieutenant, Royal Air Force), Honington, Bury-St.-Edmunds, Suffolk.

(W.L.) EDGE, Richard, B.D.S.Lpool., 34, Fairview Road, Oxton, Birkenhead.

(Y.) EGAN, Joan Hall (Miss), B.D.S.Sheff., 97, Lound Side, Chapeltown, Near Sheffield.

(—) GILLAM, Boyd Merritt, L.D.S.St.And., 19, Lindsay House, Umtali, Southern Rhodesia.

(W.L.) GOULDEN, Ralph Lindsay, L.D.S.Lpool., 26, Brooke Road West, Waterloo, Liverpool, 22.

(N.S.) GOURDIE, Lois Kathryn Margaret Hamilton (Mrs.), L.D.S.St.And., 191, Bon Accord Street, Aberdeen.

(C.C.) HACKNEY, Kenneth Stanley, L.D.S.Manc., 2, Nelson Place, Newcastle, Staffs.

(M.) HOLT, Daisy (Miss), L.D.S.Eng., 2, Hemingford Road, London, N.1.

(E.M.) JOHNSON, William Henry, Dentists Act, 35, Normanton Road, Derby.

(W.C.) KEEN, Monty Moses (Surgeon Lieutenant (D), Royal Naval Volunteer Reserve), B.D.S.Lond., L.D.S.Eng., H.M.S. *Raleigh*, Torpoint, Cornwall.

(W.L.) KENDALL, Norman, L.D.S.Lpool., Tree Tops, Guilden Sutton, Near Chester.

(W.L.) LEWIS, Eric Maxwell, L.D.S.Lpool, 13, Arnside Road, Oxton, Birkenhead.

(M.) LYONS, Dennis Michael Jack, B.D.S.Lond., L.D.S.Eng., 1a, Dollis Hill Lane, London, N.W.2.

(M.) MAUDSLEY, Belle Alvina (Mrs.), B.D.S.Lond., 4, Forsyte House, Chelsea Manor Street, London, S.W.3.

(E.S.) McCALLUM, John Gunn, L.D.S.Edin., 181, Crewe Road North, Edinburgh, 5.

(N.I.) MONTEITH, Jack Deryck Erle, L.D.S.Belf., 202, Lisburn Road, Belfast, Northern Ireland.

(S.C.) NEEDHAM, Keith Ronald (Surgeon Lieutenant (D), Royal Navy), L.D.S.Sheff., Royal Naval Barracks, Portsmouth, Hants.

(W.L.) NEWMAN, John Cyril, L.D.S.Lpool., 53, The Northern Road, Crosby, Liverpool, 23.

(M.) O'CALLAGHAN, Peter Noel, B.D.S.Irel., 540, Barking Road, Plaistow, London, E.13.

(W.L.) PATTERSON, Bruce, B.D.S.Lpool., 13, The Village, Bebington, Cheshire.

(N.I.) REILLY, George Henry, L.D.S.Belf., 19, High Street, Omagh, Northern Ireland.

(M.) SHAMASH, Charles, B.Ch.D.Leeds, 35, Hall Lane, Chingford, London, E.4.

(W.L.) SHIRES, Cecil William, L.D.S.Lpool., Sea Cottage, Marine Road East, Prestatyn, North Wales.

(Y.) SLATOR, John Ramsden, B.Ch.D.Leeds, 122, Trinity Street, Huddersfield, Yorkshire.

(Y.) THOMPSON, Leonard, Dentists Act, 168, Salt Street, Manningham, Bradford, Yorkshire.

(N.S.) WHYTE, John Kilgour, L.D.S.St.And., 27, Crown Street, Aberdeen.

Readmissions

(S.W.) REES, Gwylm Gwylfa Gwyn, L.D.S.Eng., Central Buildings, Brunhyfryd, Swansea.

(M.) WOOLF, Ivor Gerald, L.D.S.Sheff., 85, Essex Road, Islington, London, N.1.

FORTHCOMING MEETINGS AT HEADQUARTERS

September	1	Council	10.00 a.m.
,,	3	Health Acts Committee	9.30 a.m.
,,	10	Reorganisation Committee	9.30 a.m.
,,	17	Law & Ethics Committee	10.00 a.m.
,,	17	Membership Committee	2.30 p.m.
,,	18	Finance Committee	10.00 a.m.

S·S·White

TRUE DENTALLOY

. . . embodies all the finest qualities of the modern dental alloy, and makes a restoration almost as unchangeable as gold

PHYSICAL PROPERTIES

Carves with waxlike smoothness.
Crushing strength exceeds 50,000 lbs. per sq. in.
Flow less than 2·5 per cent.
Average expansion 6 microns.
More than complies with A.D.A. specification No. 1

for Fillings that Endure

FILINGS ● SHAVINGS ● CUT "A"
True Dentalloy is also sold in one-ounce and five-ounce bottles; Filings, Shavings, and Cut "A" for alloy-mercury proportioners.

The S·S·White Co. of Great Britain Ltd

126 Great Portland Street, London, W.1
and at MANCHESTER and LIVERPOOL

Face last matter

Long Life!

Character and dignity are still maintained as time passes, and many more years of trustworthy and faithful service, can be looked forward to with confidence.

And so with TRURAY—the long-lasting teeth—that keep a natural appearance and sparkling lustre over the years, and continue to perform their function with a reliable efficiency only obtained by using *porcelain* teeth.

TRURAY

—the BEST in Porcelain TEETH!

THE OLYMPIC TOOTH CO. LTD.
24-30 GREAT TITCHFIELD ST., LONDON, W.1

DENTAL NURSES SOCIETY

For all Dental Surgery Assistants

Monthly Journal—Employment Department.
Sickness and Accident Insurance Cover

THE BRITISH
DENTAL NURSES & ASSISTANTS SOCIETY
2 SUMNER STREET, LEYLAND, LANCS.

PLEASE SEND APPLICATION FORM AND FURTHER PARTICULARS TO:

Name .....

Address .....

.....

J 16 .....

WRITE FOR
"Profitable Saving"
A SOUND INVESTMENT GUIDE

- SECURITY
- GOOD RETURN
- TAX PAID
- LIMIT £5,000

ASSETS £14,000,000

RESERVES £800,000

FRUGALITAS

HASTINGS AND THANET
BUILDING SOCIETY

Head Offices:
HASTINGS and RAMSGATE

Northern: 41 Fishergate, Preston
London: 99 Baker Street, W.1

AT LAST!

The **Remington** *noiseless*
PORTABLE

After an absence of more than a decade, the Remington Noiseless Portable is again available.

Quietly efficient, it makes typing easier and better *in any circumstances.* And portable, too! No wonder it is acclaimed the world's finest personal typewriter.

Remington Noiseless Portable operates on the silent pressure printing principle. Attractive grey, non-glare finish. Complete with handy detachable hinged carrying case.

REMINGTON RAND LTD. (Dept. NP 127)
1 NEW OXFORD STREET, LONDON, W.C.1
THE WORLD'S FINEST PORTABLE

Made by Specialists

ACRYLIC TNR TEETH

with the NVX

Easier to position . . . to operate . . . to obtain the maximum of diagnostic brilliance and detail . . . when the NVX Model 5 is the dental x-ray unit chosen. Whether the mobile model or the stationary floor-type, its radiographic efficiency, abundant power and precise control—coupled with extreme flexibility and complete safety (through oil immersion)—make it the acknowledged leader in the field of dental x-ray equipment. Find out more about it—send the coupon below for further details.

NEWTON VICTOR LTD
15 CAVENDISH PLACE, LONDON W.1 LANGHAM 4074
MEMBER OF THE A.E.I. GROUP OF COMPANIES

To: Newton Victor Ltd, 15 Cavendish Place, W.1
Please send me further details of the NVX dental x-ray unit, without obligation, of course.

NAME & ADDRESS..... 51GS

NOVADENT

ACRYLIC TEETH

Economy with Quality

"NOVADENT" TEETH at 37/6 per 100 for ANTERIORS; 30/- per 100 for POSTERIORS

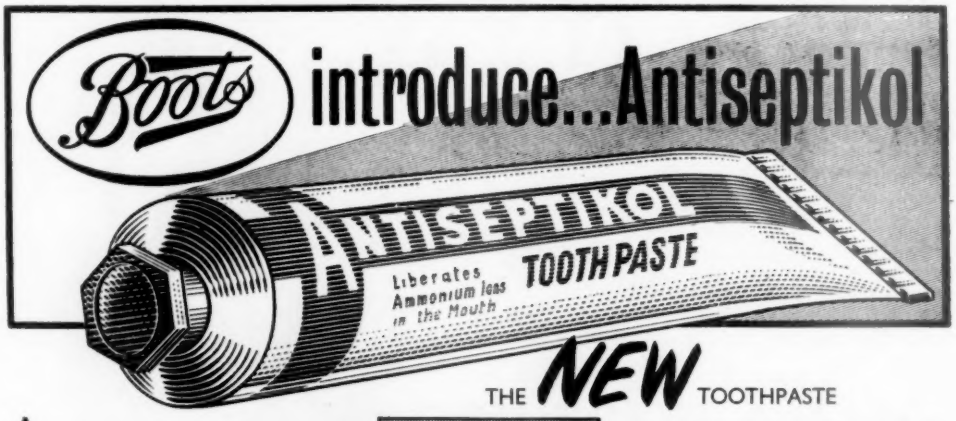
with rebates for quantities, meet this requirement

Write for a trial selection which, if you are not satisfied, will be credited in full if returned within 14 days

A TRIAL WILL CONVINCE!

SOLE MANUFACTURERS

MEDIPLASTICS LIMITED · Bowles Well Gardens · Folkestone · Kent



ALTHOUGH the function of an ordinary dentifrice is to clean the teeth, there is some evidence that the incorporation of certain ingredients which will liberate ammonium ions in the mouth may assist in the prevention of dental caries.

Recent clinical tests have also indicated that the brushing of teeth immediately after meals with a detergent dentifrice containing calcium phosphate may also reduce the incidence of caries.

OBTAINABLE AT ALL BRANCHES OF Boots THE CHEMISTS

ANTISEPTIKOL has been carefully formulated in the light of these researches to present ammonium ions, calcium phosphate and an efficient detergent in a pleasantly flavoured base. You can confidently recommend Antiseptikol for regular use by your patients.

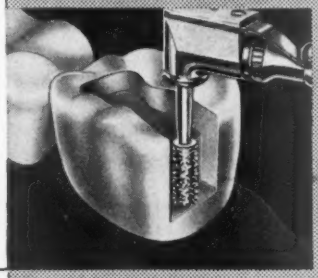
Further information and samples for surgery use are available from

BOOTS PURE DRUG COMPANY LIMITED
STATION STREET NOTTINGHAM 8.109

Some further indications for the use of "Solila" DIAMOND DENTAL INSTRUMENTS

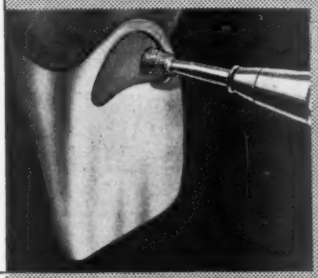
Solila Diamond Dental Instruments permit easier, faster, and more accurate tooth and cavity preparation.

Deep cavity preparation using the Long Straight Cylinder (No. 13).

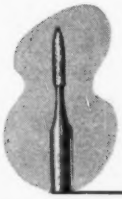


Pattern chart and booklet 'The Selection and Use of Solila Diamond Dental Instruments' is obtainable on request.

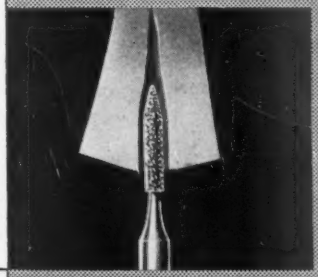
Undercutting a cervical cavity for plastic filling using a Small Inverted Cone (No. 48).



Clogged diamond instruments are quickly and effectively restored to full efficiency with Solila Diamond Instrument Cleanser.



Enlarging pulp canal for post-crown fitting with a Long Narrow Cylindrical Tapering Cone (No. 62).



Made by Universal Grinding Wheel Company Limited, for
THE AMALGAMATED DENTAL COMPANY LIMITED, LONDON W.1

The problem was

to neutralise aspirin and to make it soluble.

The problem has now been solved.

Aspirin is acidic, sparingly soluble, and for many subjects a gastric irritant. By contrast, its calcium salt is neutral, soluble and bland. Unfortunately, however, calcium aspirin as ordinarily presented is unstable, and thus, sooner or later becomes contaminated with the breakdown products, acetic and salicylic acids. In 'Disprin' the problem of providing calcium aspirin in stable and palatable form has been solved. Extensive clinical trials show that Disprin in large dosage and over prolonged periods, can be tolerated without the development of gastric and systemic disturbances, except in cases of extreme hypersensitivity.

DISPRIN BRAND *Neutral, stable, soluble, palatable calcium aspirin*

On prescription Disprin is free of Purchase Tax.
Clinical sample and literature supplied on application.

RECKITT & COLMAN LTD., HULL AND LONDON (PHARMACEUTICAL DEPT., HULL)

Lucozade
paves the way . .

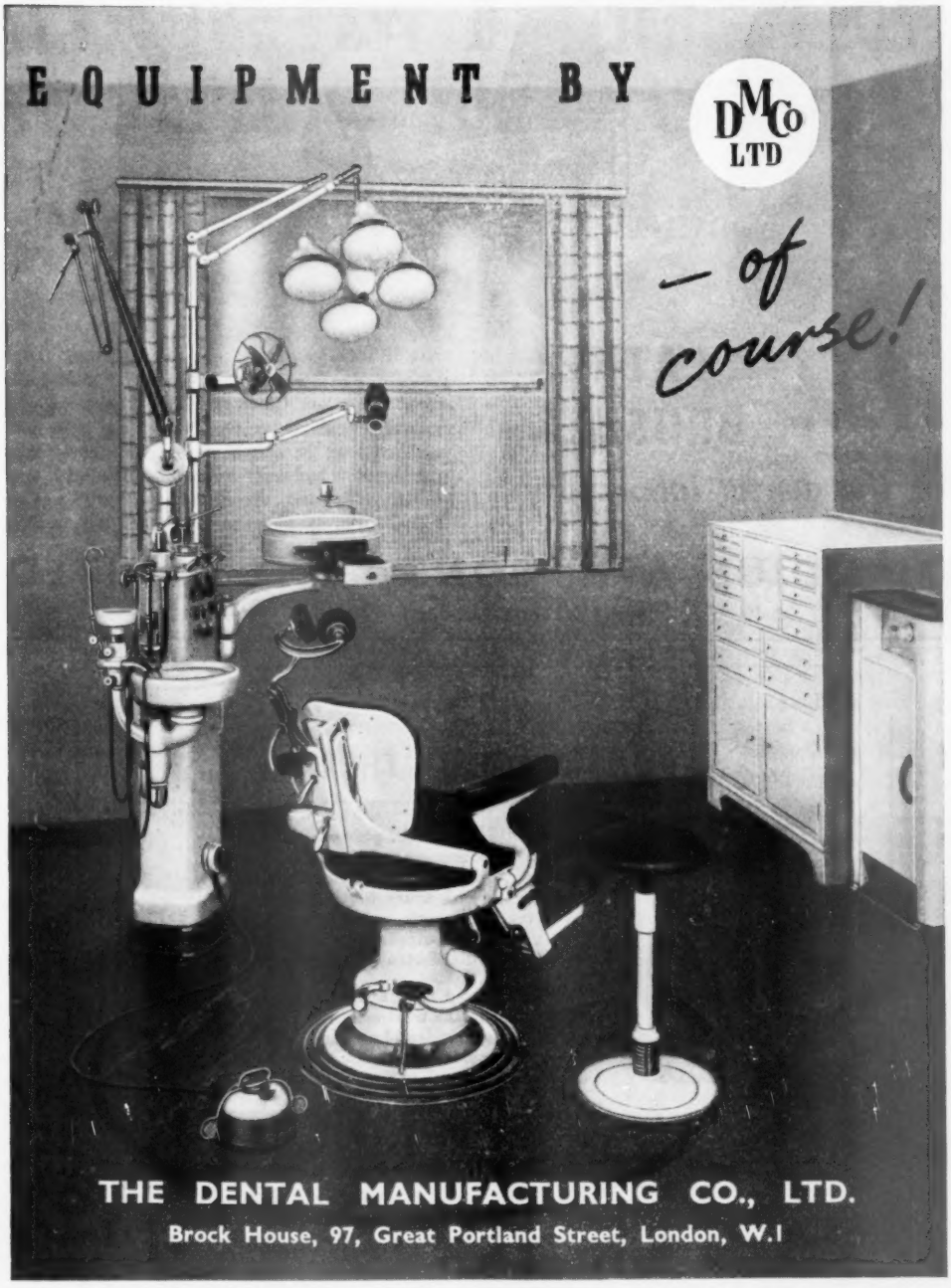
A glass of Lucozade will very often help you to put a nervous patient at ease. Lucozade has all the known effectiveness of glucose in increasing confidence and building up nervous energy. Because it is a delightful drink in its own right, with an attractive flavour and a refreshing sparkle, Lucozade is certain to be readily accepted by every patient, young or old. Experience has shown, time and time again, that Lucozade has its own special value to the Dental Surgeon.

Lucozade

An improved form of GLUCOSE therapy

LUCOZADE LTD · GREAT WEST ROAD · BRENTFORD · MIDDX

D19



THE LARGEST MANUFACTURERS OF DENTAL EQUIPMENT IN THE BRITISH COMMONWEALTH

S.7.

1

3

Four patterns from the large range

12

8

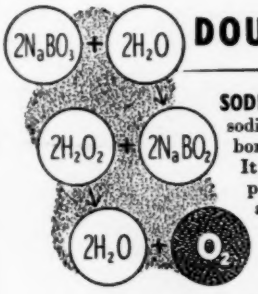
Ash LATHE BRUSHES

for the dental laboratory

Ash Brushes withstand the most arduous usage because they are made from the highest-grade materials. Pure Chinese bristle, a material not generally available at the present time, is used exclusively in the best black brushes. All brushes run smoothly and wear evenly throughout their long working life and the name Ash, branded on every brush, is your guarantee of top quality.

CLAUDIUS ASH, SONS & CO. LIMITED

26-40, Broadwick Street, London, W.1 and Branches



DOUBLE ACTION THERAPY

SODIUM METABORATE. In the presence of water, sodium perborate decomposes to form sodium metaborate and hydrogen peroxide, as portrayed here. It is this reaction with water which gives sodium perborate its therapeutic value; being mildly alkaline it tends to neutralize acids formed in the mouth and has a disinfectant and germicidal action.

OXYGEN liberated from hydrogen peroxide, is of special value in the treatment of Vincent's Angina and anaerobic infections of oral and peridental tissues. It is a valuable adjunct in the treatment of pyorrhoea, in orthodontia and as a prophylactic against anaerobic infections of the mouth or dental tissues.

VINCE is a convenient and stable preparation which provides oxygen and sodium metaborate.

VINCE

VINCE is packed in 2oz. bottles

Sole Distributors for Vince Laboratories Ltd.

William R. **WARNER** *and Co. Ltd. Power Road, London W.4.*

GLASGOW TEST DENTIFRICE NOW AVAILABLE IN TOOTHPASTE FORM

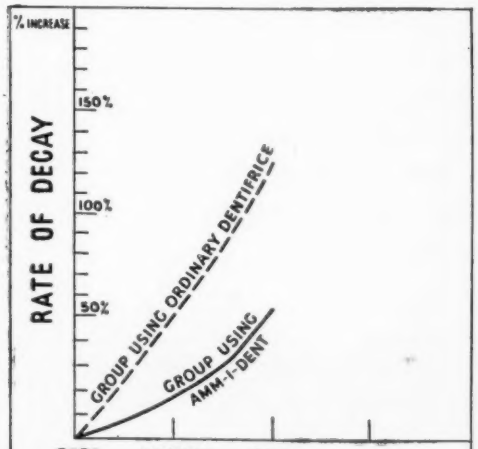
New figures on current Amm-i-dent investigation soon to be released

DENTISTS who have received samples of the much discussed ammoniated urea dentifrice, Amm-i-dent, may be interested to know that it is now available everywhere in toothpaste form. It contains the same active ingredients (dibasic ammonium phosphate and synthetic urea) as the Amm-i-dent powder, which reduced decay in City of Glasgow tests by 39·5 per cent.

The investigation of Amm-i-dent, undertaken by the Public Health and Welfare Department of the Corporation of Glasgow, is nearing the completion of its second and final year. The original panel of children from the 6 Glasgow nursery schools is still being used. The same children that began the tests have continued throughout the test period; one group using Amm-i-dent and the other, ordinary dentifrices. They continued to follow an identical and rigid routine. They all brush their teeth daily, five minutes each time under strict supervision. The probe and laboratory methods have not altered.

Final examinations will be made this September. And it is hoped that, shortly after, a full report can be made. Then we shall have an even closer idea of what may be reasonably expected of ammoniated urea dentifrice as an effective control in the rate of caries development.

Sample tubes of toothpaste are not yet available. But dentists who would like a supply of Amm-i-dent powder for distribution to patients and a standard tube of paste for testing purposes are invited to write to: Professional Dept., The Wernet Dental Mfg. Co., Mill Green, Hatfield, Herts.



Graph showing Amm-i-dent findings after year's investigation.

Under the auspices of the Public Health and Welfare Department of the Corporation of Glasgow, 60 children follow a strict routine of brushing, eating and examination.

Glasgow test children reveal caries reduction of 39.5 per cent.

Are you receiving these Cottrell Publications?

"THE DENTAL COURIER"

The only newspaper of its kind produced especially for the dental profession. It is packed with a wealth of dental news, views, articles and information.

"This lively and racy production contains in its four small pages a remarkable amount of real dental news."

Extract from a review in "THE DENTAL TECHNICIAN," May, 1951.

"DESIGN FOR PROGRESSIVE DENTISTRY"

This colourful and informative pamphlet contains illustrations, descriptions and prices of Cottrell products, including the latest introductions.

If you do not receive either of these publications, please write to Cottrell & Co., and your name will be placed on our free mailing-list.

COTTRELL & CO.

15-17 · CHARLOTTE STREET · LONDON · W.1

Telephones: LANGHAM 5500 (20 lines). Telegrams "TEETH, RATH, LONDON."

GUARANTEED PRODUCTS OF HIGHEST QUALITY PD PRODUCT

P.D. DENTAL PRODUCTS

Swiss Dental Instruments of the highest quality obtainable

The unsurpassed quality of these P.D. Dental Instruments well maintains the tradition for fine craftsmanship for which the Swiss have earned so enviable a reputation.

The British Dental Practitioner can place the fullest confidence in the complete reliability of these superb instruments.

The range includes:

PULP CANAL REAMERS

NERVE BROACHES

NERVE CANAL FILES

ROTARY ROOT PASTE FILLERS

ROOT CANAL RASPS

RAT TAILED FILES

Note: Most P.D. instruments can be supplied in Stainless Steel.

Available through your usual dealer or direct from

R. Rosen (Dental Depot) Ltd.
NEWCASTLE UPON TYNE, 2.

4 GT. NORTH RD, NEWCASTLE UPON TYNE,
Telephone: Jesmond 1515.

R.T.9.

ELECTRIC HOT AIR STERILIZER

WITH THERMOSTATIC CONTROL

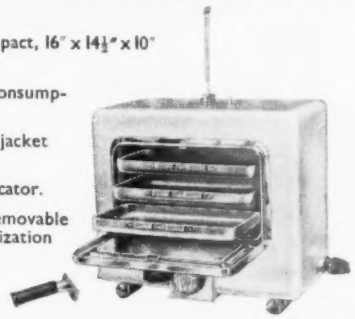
Neat and compact, 16" x 14½" x 10" overall.

Low current consumption.

Heat resistant jacket and handles.

Pilot light indicator.

Fitted three removable trays for sterilization in relays.



SES

Ideal for the thorough sterilization of instruments, dressings, swabs, all glass syringes, etc.

Recommended by eminent members of the profession.

£38 · 0 · 0

SURGICAL EQUIPMENT SUPPLIES LTD
WESTFIELDS ROAD, LONDON, W.3
Particulars from your local dealer

Professional Approval . . .

SELTO Dental Salt is a unique combination of sodium chloride and sodium bicarbonate with an efficient polishing agent. It is particularly valuable in cases of soft or tender gums: it is entirely free from harsh abrasive material, polishes quickly and without scratching. Pleasant to the taste, it imparts a delightful freshness to the mouth after use. SELTO is stocked by Boots Branches and all leading chemists. Professional samples and literature sent on request.

SELTO Dental Salt

SELTO (Eastbourne) LTD., HAMPDEN PARK, EASTBOURNE

For oral cleanliness

To keep the teeth and mouth clean without doing damage to either—that is the simple function of a good Tooth Paste. Macleans performs it. Macleans Peroxide Tooth Paste removes greasy film from the teeth. The polishing ingredients can then act easily and without abrasive action. They are ultimately soluble in saliva and leave no solid residues in the mouth.

. . . and oral health

Macleans Peroxide Tooth Paste is sufficiently alkaline to mitigate oral acidity. It neutralises the acid patches formed on or between the teeth by fermenting food particles. It is mildly antiseptic but uninjurious to the normal oral flora which defend the mouth against pathogenic bacteria. It is pleasant to use and of refreshing flavour.

Sample tubes of Macleans Peroxide Tooth Paste are now available for distribution to your patients. A supply of these, and copies of a leaflet "The Care of the Mouth before and after the Extraction of Teeth," will gladly be sent to you free on request. This offer applies only to Great Britain and Northern Ireland.

MACLEANS PEROXIDE TOOTH PASTE

MACLEANS LIMITED, PROFESSIONAL DEPARTMENT, GREAT WEST ROAD, BRENTFORD, MIDDLESEX

PRECIOUS METALS FOR DENTISTRY
INLAY AND CASTING GOLDS AND SOLDERS

Thessco "D" REGD.

A SILVER AMALGAM ALLOY OF OUTSTANDING MERIT

SMELTERS AND REFINERS OF SWEEP, SCRAP AND ALL TYPES OF PRECIOUS METAL BEARING WASTES.

The SHEFFIELD SMELTING Co LTD

BIRMINGHAM SHEFFIELD LONDON

ESTABLISHED 1760

Berry Street, Clerkenwell, London, E.C.1: Royds Mill Street, Sheffield, 4: St. Pauls Square, Charlotte St., Birmingham

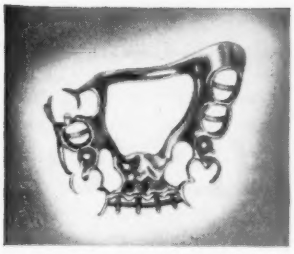
Announcing MEGALLIUM

A NEW ALLOY TECHNIQUE AND SERVICE

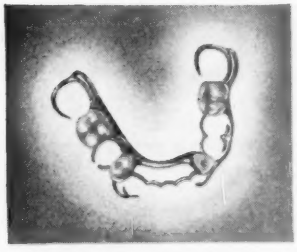
FOR THE DENTAL PROFESSION

MEGALLIUM FIDEM FACERE

MEGALLIUM IS THE CHROMIUM COBALT ALLOY POSSESSING ALL THE FINEST FEATURES.



This base was designed to give gingival freedom, stability of the free saddle and maximum anchorage for the acrylic.



The strength and resilience of Megallium allows variety in clasp design and reduces the uncomfortable bulk of buccal bars.

The new casting alloy Megallium has a specific gravity half that of Gold, and is almost twice as strong. Clasps cast from this alloy are resilient and possess ideal adjustability. It has a hard permanent mirror-like surface and the slender bars of the skeleton bases give a unique beauty.

TESTED AND APPROVED BY MANY DENTAL PRACTITIONERS THROUGHOUT THE BRITISH ISLES

Megallium does not come to you untried in practice. Although it passed every stringent laboratory test to which it was subjected, we were not satisfied until it had been used by a number of practitioners and the results watched by them over a considerable period. Their satisfaction and approval are unanimous.

A NEW CASTING TECHNIQUE WHICH ASSURES EXCEPTIONAL ACCURACY OF FIT

Given good impressions, cast in a reliable stone, such as Kaffir, and a correct bite, the new high temperature casting technique permits the highest accuracy and reproduction of surface detail. The exceptional fluidity of Megallium in the molten state makes it possible to cast strong Kennedy Bars as thin as ·022 x ·044 half round wire.

THE ACCUMULATED KNOWLEDGE AND EXPERIENCE ACQUIRED IN DEVELOPING AND PROCESSING THE NEW ALLOY MEGALLIUM IS AT YOUR SERVICE FOR THE DESIGN AND CONSTRUCTION OF YOUR PARTIAL CASES.

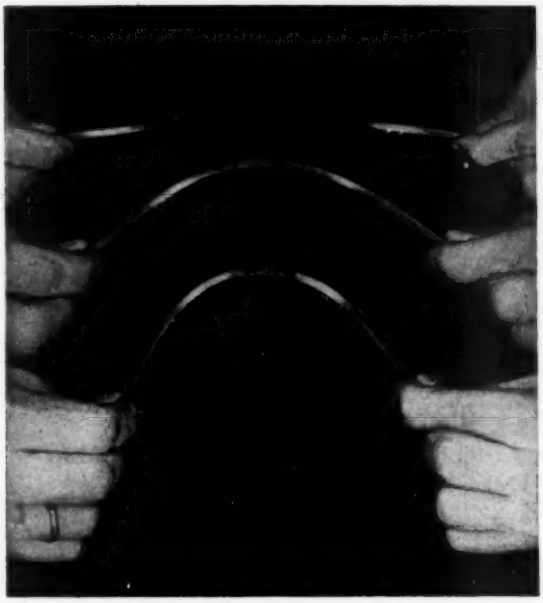
"MEGALLIUM" Registered Trade Mark No. 694373

C. & L.E. ATTENBOROUGH LTD.

DENTAL MECHANICS AND DENTAL BRUSH MANUFACTURERS

VISCOSA HOUSE • GEORGE STREET • NOTTINGHAM

Telephone : NOTTINGHAM 40374 Telegrams : LATERAL . NOTTINGHAM



PORTEX
REG.

"CO-POL"

AN ETHYL-METHYL ACRYLIC
CO-POLYMER

MOLECULAR COHESION

IMPARTS

TOUGHNESS

AND SO REDUCES THE INCIDENCE OF FRACTURES

Shades available: LIGHT PINK, MID PINK, DARK PINK and CLEAR

MANUFACTURERS:

PORTLAND PLASTICS LTD., ABBEY HOUSE, VICTORIA STREET, S.W.1 ABBey 5205/6

'CLINIC' *Dental* PRODUCTS

combine quality with economy

'CLINIC' SILVER ALLOY

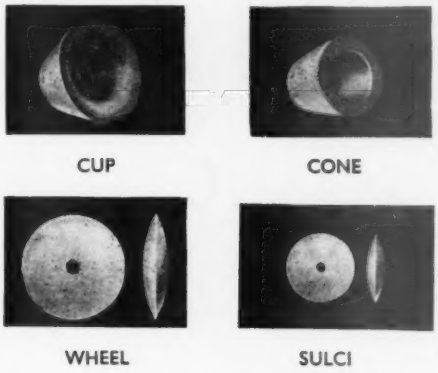
Makes strong enduring fillings of great density. Takes a high polish. Medium setting. In 1 oz. bottles.

'CLINIC' MERCURY

Chemically pure. The natural choice for use with 'Clinic' Silver Alloy. In 4 oz. bottles and 1 lb. stone jars.

'CLINIC' CLEANING AND POLISHING DISCS

Made of rubber impregnated with a finely ground, gentle acting abrasive, 'Clinic' Cleaning and Polishing Discs enable teeth to be cleaned without spatter, as there is no free abrasive to fly about. They are made in the four shapes illustrated. Supplied in boxes of 25. The Cup, Cone and Wheel Discs only, are also supplied assorted in boxes of 25.



CUP CONE WHEEL SULCI

'CLINIC' FACE MASKS

A health safeguard. Worn while operating to protect the mouth and nose. Do not impede the breathing or obstruct the vision. Light and almost invisible. Non-inflammable. Supplied in boxes of 12, with one pair of adjustable earpieces.

Other 'CLINIC' products include :

'CLINIC' EXPLORERS

'CLINIC' EXOLEVERS

'CLINIC' COPPER AMALGAM

'CLINIC' G.P. TEMPORARY STOPPING

Your dealer will supply

THE INTERNATIONAL TOOTH COMPANY LIMITED, LONDON, W.1

The essential quality which distinguishes 'STELLON' from its contemporaries is its unique CONTROLLED 'FLOW' feature that fully meets the TIME FACTOR required by dental technicians, and assures the best possible result in the finished denture.

At normal room temperature, the controlled 'flow' develops in only ten minutes from the time of mixing. This absence of time lag is an overriding consideration to the busy dental technician.

STELLON

REGISTERED TRADE MARK

the acrylic that is **essentially** dental

The 'STELLON' process is a development of the Technical Division of

THE AMALGAMATED DENTAL CO. LIMITED, LONDON, W.1

Published by the British Dental Association at 13, Hill Street, Berkeley Square, London, W.1, and Printed in England by Staples Printers Limited at their Great Titchfield Street, London, establishment.